Officials Take Measures to Stop Misuse of FHA Plan in Detroit

(*Concluded from Page 1, Column 5*)

afford, or that they had been mislead into believing that the salesmen were "agents of the government" who had misinformed them as to the terms of payment.

Electric refrigerators are involved in only situation No. 2, which has apparently been brought about by incorrect credit information, and by the "sharpshooting" selling tactics of dealers and salesmen using questionable tactics.

Lilly Studies Detroit Situation

L. M. Lilly, president of the First Bancredit Corp., which has probably purchased more dealer paper than any other FHA-insured lending institution, has been in Detroit to study the situation at first hand. He says that the rush of FHA business found the loaning agencies and credit reporting bureaus unprepared, with the result that some loans were made that never would have been made under normal circumstances.

Mr. Lilly cites the following example, which he says is not by any means typical, but which merely demonstrates how the press of business resulted in the failure to obtain highly pertinent credit information in some cases.

"One of the reports which we received was one on which anyone would have granted a loan," said Mr. Lilly. "The man in question had an income of $1,600 a year, had been employed for 12 years, and was shown to have but a few current obligations of trifling amounts.

"Yet, it later developed that the man had eight judgments outstanding against him for failure to pay obligations which he had incurred—and not one of these showed up on the credit report."

Mr. Lilly declared that First Bancredit had discontinued doing business with a number of dealers in the past two months because they had been found to be using "high pressure" methods, and that the lending institution will continue to quit doing business with dealers who are discovered using questionable methods in the future.

However, the statement made in the Feb. 12 issue of ELECTRIC REFRIGERATION NEWS that First Bancredit on Nov. 25 of last year had discontinued doing business with 200 Detroit dealers because they were of the "fly-by-night" variety was incorrect; the dealerships were cancelled from the list of clients at that time solely because of the fact that the volume of business originating in the Detroit area was greater than The First Bancredit Corp.'s facilities could provide for.

Problem Is Local One

Mr. Lilly says that the situation in Detroit is not typical of the whole country, and points to the record of delinquencies on paper which First Bancredit has purchased to bear out this statement.

For the whole country, says Mr. Lilly, delinquencies on monthly instalments past due on total paper purchased are running only 2/5ths of 1 per cent, while in Detroit they total up to 1½ per cent of the total volume purchased.

Mr. Lilly says that there have been a few cases of out-and-out fraud discovered in widely scattered parts of the country; and that these have been vigorously prosecuted.

For instance, there was the case of a dealer in Texas who went so far as to put a refrigerator in the home of a colored homeowner, whose home was not even wired for electricity. The purchaser had been given to understand that he was to try to sell the refrigerator. The dealer was arrested and indicted, but skipped to Mexico.

One Texas appliance distributor was found to be paying an independent credit reporting bureau to "doctor up" credit reports so the lending institution would accept them.

Retailers' League Helps

The Detroit situation at the present time is pretty clean due to the efforts of the Better Appliance Retailers League, claims Frank Gleason, secretary of the League.

"Most of the deals that have been given publicity were consummated before the League was formed last fall," declares Mr. Gleason.

"These 'bad deals' don't come to light until 90 days after the sale is made, which means that practically all of them were made before the League was formed."

With respect to the oil heaters, a conference of manufacturers, distributors, dealers, and lending institutions was called in an effort to figure out some plan of giving satisfaction to customers who claimed that their heaters weren't operating in an efficient manner.

Concerning this phase of the situation, Mr. Lilly declared that First Bancredit last Dec. 19 had changed its policy with respect to financing oil heater sales, and had made all deals after that on the basis of recourse to the dealer.

New Oil Heater Agreement

Text of the essential part of the new agreement on oil heaters which First Bancredit requires dealers to sign is as follows:

"In consideration of your purchasing from us instalment notes originating through the sale of space heaters under the National Housing Act, we agree that on all such notes sold to you that if the maker of such note should refuse to pay, claiming as a reason therefor lack of service or failure of the article itself to perform satisfactorily to the purchaser, then and in that event we agree to satisfy the maker of the note, and, failing to so satisfy him, and such delinquency continuing for a period of 60 days, we will agree to repurchase this note and pay you the amount then owing on the note less the unearned discount charge, with the distinct understanding that you will not be required or asked to file the same with the Federal Housing Administrator under your insurance policy."

Hotpoint Reveals Sales Plans & New Products

(*Concluded from Page 1, Column 4*)

in electrical, department store, furniture store, and radio publications.

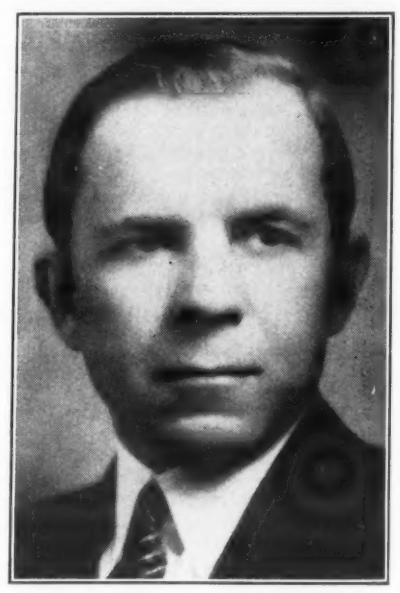
Promotional material for dealer and salesman's use includes retail sales presentation manuals, recipe books, the "Hotpoint Visualizer," and direct mail and promotional literature for customer distribution. New window displays and electric signs for dealer identification are also being prepared.

Besides the newspaper and radio advertising which this G-E division sponsors in cooperation with Hotpoint distributors and dealers, a 24-page poster service will be released for dealer use, Harry C. Mealey, Hotpoint refrigerator division manager states.

Mr. Mealey also announced that eight recently appointed district representatives will introduce the new line and present the Hotpoint spring sales plan at small group meetings of dealers' and jobbers' salesmen, instead of making the sales presentation through large regional conventions.

Mayflower Officials

HARRY J. HUNT



FRED C. GEILER

(*See Story on Page 1*)

Home Show Planned by Pittsburgh League For April 18-26

PITTSBURGH — Pittsburgh's National Home and Electric Show to be held April 18 to 26 in Motor Square Garden, East Liberty, will be the first home show to be staged in Pittsburgh for more than a decade, declares Gerard H. Nickerson, general chairman of the administrative committee.

Sponsored by the Electric League of Pittsburgh and the Pittsburgh Builders Exchange, in conjunction with the Federal Housing Administration, the show will be directed by G. E. McDonald, who is at present preparing a national home show in Philadelphia. He will be assisted by his brother, F. D. McDonald, as associate director.

Two carloads of educational material, which will form a background for other of the shows being held in cooperation with the FHA this winter and spring, will be furnished by the Federal Housing Administration.

Twelve "talking towers," synchronized so that the same message is heard as the visitor passes from one to another, will broadcast details of the FHA.

A full-sized house, landscaped, completely furnished, and designed especially as a model for people of moderate income, will be erected in the center of the show.

Special displays are being arranged by manufacturers of building materials and equipment from throughout the tri-state and western Pennsylvania districts as well as by national concerns.

An FHA booth, where information on how to acquire a home, repair a home, or refinance a mortgage on a home under the Federal Housing Administration Act can be obtained, will also be set up. The show will be conducted under the rules and regulations of the Manufacturers' Housing Display Council.

Mr. Nickerson will be assisted by F. H. Stone of the Duquesne Light Co., as vice chairman; and Robert K. Cochrane of the Builder's Exchange as secretary-treasurer.

Three Utility Salesmen Better 1935 Quota

BIRMINGHAM, Ala.—Three salesmen of the commercial refrigeration division of Alabama Power Co. attained more than 100 per cent of their quotas during 1935.

C. B. Cosby, Birmingham representative, headed the list with 121 per cent quota sold. C. W. Millican, Jr., Huntsville, Ala., sold 112 per cent of quota, and F. C. Brigham, Anniston, Ala., sold 107 per cent of quota.

Sales Idea of the Week

By V. E. (Sam) Vining

I have no quarrel with the sales appeal of the small baby in the family. Nevertheless, I wonder if we won't do well at times to consider the health of—

The housewife herself.

Every day—

Through slush, snow, rain, and cold, she drags herself into crowds of people packed behind closed doors of the stores, breathing stale air filled with all the germs of colds, influenza, and other epidemics bred in crowds.

She leaves overheated stores and markets, goes directly into the street, providing the very conditions in her system which ferment and encourage the development of the germs and bacteria she picked up in the stores.

You say—she can order by telephone—

Yet, every thrifty housewife knows that she must go to the store and pick out her own supplies.

An electric refrigerator will permit her to purchase her week's supply in one trip, planned on those days when the stores are not crowded and when weather conditions are favorable.

I know husbands, and so do you, who will buy a refrigerator if that side of the health problem of their wife is put up to them, under the heading:

"Where did your wife pick up that last cold?"

The baby appeal is wonderful. Stick to it, but don't miss the point that many prospects may also be interested in the health of the wife, the health of the husband, or—

Even the health of a bull pup.

Florida Sales Get Big Boost When Utility Plans Many-Sided Promotion Program for Dealers

MIAMI, Fla.—A cooperative plan of advertising and selling agreed upon by dealer and utility company is credited with placing Florida second among all the states in percentage of increase in refrigeration sales for 1935 over the preceding year.

In the southeastern section, where the record was best, the Florida Power & Light Co. was out to sell power and the dealers to sell refrigerators, so that competition didn't stand in the way of cooperation, Florida dealers point out.

The power company sponsored an advertising campaign using bill boards and newspaper copy to set forth the service to be had through the use of an electric refrigerator, with food saving, the large purchase savings, and the economy in cost of electric refrigeration over ice, as main talking points.

With each of these advertisements, paid by the utility company, a "See Your Dealer," or "Call on Your Dealer for Particulars," note was attached with a list of a dozen or more dealers. Around the larger utility ad, the dealers would then insert their individual copy.

A customer survey listing those persons using power but with no refrigerator was an added service which the utility made available to the dealer who did not want to follow a cold canvassing program.

Free entertainment, gift drawings, and a daily cooking school drew crowds and secured prospective customer lists for the dealers who cooperated in the electrical exhibit promoted later in the campaign.

A dozen home economists, employed by the Florida Power & Light Co., went out to the home of any customer at the dealer's request and instructed her in the use of her box.

Radio programs also augmented the other electric refrigeration advertising.

Men highly trained in sales budgets, sales promotion planning, or training salesmen have also been made available to the dealers by the utility company.

BRUNNER

Send for the New

REFRIGERATION CATALOG

Eight Models of Compressors

Forty-one Models of Highsides

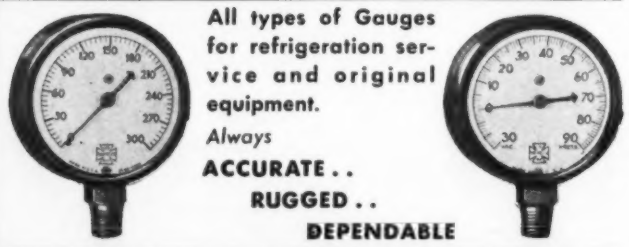
from 1/6 H. P. to 15 H. P.

BRUNNER MANUFACTURING CO.

UTICA, N. Y.

U. S. REFRIGERATION GAUGES

Standard of the Trade



All types of Gauges for refrigeration service and original equipment.

Always

ACCURATE . .

RUGGED . .

DEPENDABLE

U. S. GAUGE CO.

44 BEAVER STREET NEW YORK

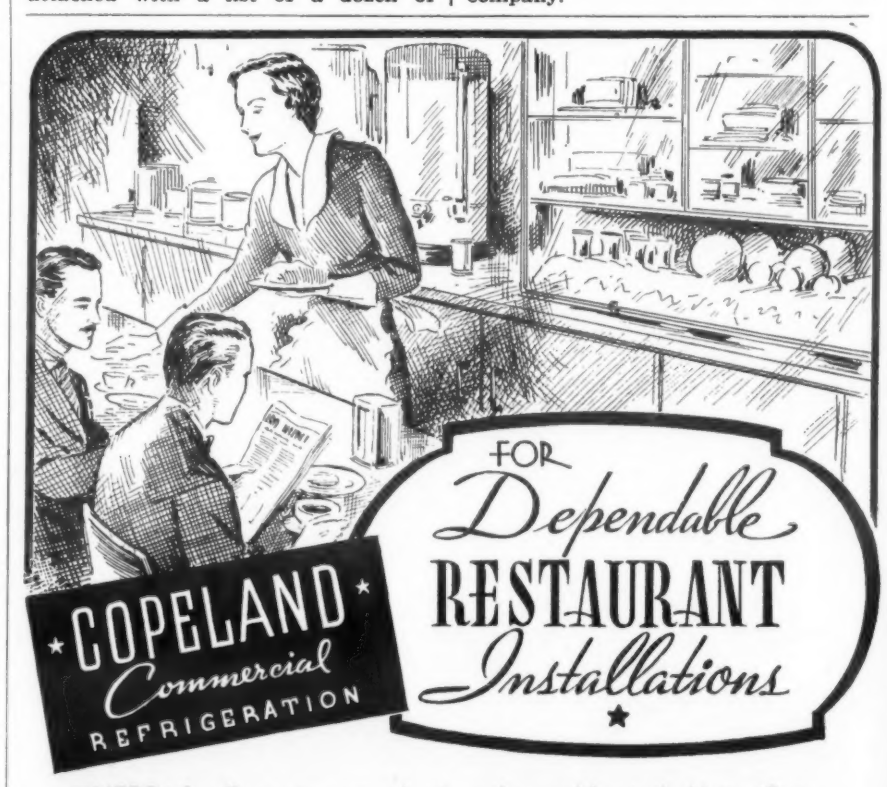
KRACK ENGINEERED

LIFETIME COILS AND UNITS

CUSTOMIZED COILS: SUR-E-FEX, HUM-E-FEX, LOUVR-E-FEX, AIR-E-FEX

CUSTOMIZED UNITS: FAN-E-FEX, (Standard and De Luxe), TRANS-E-FEX, DRAFT-E-FEX, BLO-E-FEX, VERT-E-FEX For Refrigeration, BREEZ-E-FEX, COMF-E-FEX, SAN-E-FEX For Air Conditioning. Send For New Literature

REFRIGERATION APPLIANCES, INC., 1342 W. Lake Street, Chicago



THERE is hardly one important business thoroughfare in the United States that does not have one or more restaurants equipped with Copeland Commercial Refrigeration. Thousands of satisfied owners testify to the economy they achieve with these smooth-running Copeland units. This is just one more reason why Copeland distributors stay SOLD on the advantages of handling a trouble-free line. Perhaps you, too, should turn to Copeland. A few territories are available. Why not write us today?

COPELAND REFRIGERATION CORPORATION

Manufacturers of a complete line of Household and Commercial Refrigeration

Holden Ave. at Lincoln . . . DETROIT, MICH.

Copeland

DEPENDABLE Electric REFRIGERATION

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

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In This Issue

What's Wrong with Air Conditioning?

The air-conditioning industry needs leadership, says F. M. Cockrell in an extended editorial published in this issue of the NEWS.

What is meant by leadership? Does it mean that the industry should have a "master mind" to guide its destinies? Or that some powerful corporation should spend several million dollars to "set the pace," or should somebody make a speech, write a book, or carry the flag in a parade?

Mr. Cockrell's idea of leadership does not include any of these things but he tells how the electric refrigeration industry acquired the desired type of leadership almost exactly 10 years ago.

Looking at the electric refrigeration sales curve, it is evident that something happened about 10 years ago which very effectively accelerated the industry's progress. Of course a good many things happened to account for the marvelous sales records which have been made year after year but in the editorial Mr. Cockrell tells about *one* significant event.

That particular turn of affairs led to a series of activities which profoundly affected the whole future course of electric refrigeration. He believes that air conditioning would be greatly benefitted by a similar experience. See page 10.

* * *

Grover Townsend Tells A 'Success Story'

In this issue, Grover A. Townsend, refrigeration technician of Salamanca, N. Y., tells the story about how he happened to become an independent refrigeration service man. It is a humdinger. You ought to read it whether or not you are interested in refrigeration service. You will get two or three good laughs and some first-hand information about the problems of an ambitious young man in this day and age.

If you happen to know a young man, or several of them, who cannot get a job and think nothing can be done about it, tell them to read this story about how Grover Townsend met the situation. (See page 23.)

Grover wanted to go to college but his father fell off a box car and broke his kneecap and that changed his plans. Grover tried to get a job in Buffalo but couldn't, so he did something else. Grover tried to service a Frigidaire-operated ice cream cabinet but couldn't make it work until—but read the story yourself and see how he solved that problem.

* * *

Around the World with George F. Taubeneck

On Monday of this week members of the editorial staff were startled by low moans emanating from the office of the managing editor. Rushing in to give aid, they discovered him intently gazing at a large collection of pictures just received from Honolulu, where Editor George Taubeneck recently spent two weeks investigating refrigeration activities. Apparently George's survey included a close inspection of the bathing beaches and the latest styles in grass skirts. Pictures and story will appear in a later issue. While you are waiting, read George's account of his visit in San Diego, Calif., on pages 11, 12, 13, 14, 15, and 16 of this issue.

* * *

The Master Service Manual Is Ready

The MASTER SERVICE MANUAL is off the press—at last. We suggest that you read the review of this long-awaited book which appears on page 24, and see if you don't think it might help in providing an answer to service problems which you have encountered.

* * *

Air Conditioning in Kansas City

Where air-conditioning equipment has been installed in Kansas City; who installed it, and what make of equipment was installed, is all told in a tabulation on page 18.

Copeland Uses Classic Design On '36 Cabinets

2 Cylinder Compressor Used; Truscon to Sell Entire Output

DETROIT—New, classic cabinet lines, addition of several convenience features, and a refrigeration system built around a two-cylinder compressor in which a number of design improvements have been made, distinguish the 1936 Copeland line of household electric refrigerators.

The entire output of 1936 Copeland household electric refrigerators will be merchandised by Truscon Steel Corp.'s refrigeration division, under the terms of an agreement consummated Dec. 1 (see Nov. 20 issue of ELECTRIC REFRIGERATION NEWS).

"Beautiful as a Grecian temple" is the claim which Copeland is making for its 1936 cabinets. This claim is inspired by the fact that Albert Kahn, noted architect and industrial designer of Detroit, followed Grecian classic lines in designing the cabinet.

A gently rounded-out door construction, with the effect carried through to the top of the cabinet to give a "superimposed" effect, is the basis of the design. Vertical striations running the full length of the cabinet and cabinet hardware finished in keeping with the general effect, add to the cabinet's beauty.

Cabinets are made by Truscon Steel Co., and the exteriors are finished with a product of Truscon's own research laboratories — "Alchemik Primer," baked onto the steel at 350° F., followed by two coats of lacquer.

Interior of the 1936 Copelands is also marked by a number of chambers. The food compartment is wider and shallower, making foodstuffs at the back of the cabinet more accessible.

The evaporator is wider and not so high, and is covered by an aluminum door. It is centered to provide bottle storage space on both sides.

Principal new convenience feature is the "four-in-one" food file. In the bottom shelf compartment are hung three easy-sliding storage units. Two of these are sliding wire baskets; the third, or middle unit, is a metal storage drawer. All three have drawer fronts finished in satin-silver, each with convenient hand recesses.

In addition to these, the second shelf space is equipped with an easy-sliding large wire tray.

Other convenience features include a rubber ice-cube tray, automatic interior electric light, flat-bar shelves, tip-up shelf alongside of the evaporator, and in models 736 and 936, a space below the evaporator for storage of such large articles as a watermelon, fowl, etc.

The Cutler-Hammer cold control, with the regulation dial directly above the evaporator, has nine different freezing speeds.

All Copeland household electric refrigerators this year have the two-cylinder, slow-speed (operating at 420 r.p.m.) Copeland reciprocating compressor.

One of the distinguishing features of the compressor construction is the method of lubrication provided. Main bearings and the shaft seal are lubricated by a blade-type, directional oil distributor which operates off the crankshaft.

Suction gas is taken into the com-

(*Concluded on Page 28, Column 1*)

Landers, Frary & Clark Names 10 Distributors

NEW BRITAIN, Conn.—Ten new distributors for Universal refrigerators were recently appointed by Landers, Frary & Clark, reports B. C. Neece, sales manager of the motor appliance division.

The new jobbers are: Electric Corp., Los Angeles; Wholesale Distributors, Harrisburg, Pa.; Glasgow-Allison Co., Charlotte, N. C.; Allied Electric Supply Co., Pittsburg; Splane Electric Co., Detroit; Kirkmyer Electric Co., Richmond, Va.; Albany Hardware & Iron Co., Albany, N. Y.; Albuquerque Stores, Inc., Albuquerque, N. M.; Westinghouse Electric Supply Co., Toledo; and Smith-Perry Electric Co., Dallas.

Sanitary Features 'Hydrocold' in 5 New Models

FOND DU LAC, Wis.—Sanitary Electric Corp.'s 1936 line of household electric refrigerators is in five models of from 4 to 8.7-cu. ft. net capacity, and has as its leading feature the "Hydrocold," a double-flue cooling unit which is claimed to prevent drying out of crisp foods and to maintain a constant temperature throughout the cabinet interior.

The three larger models in the line are also available as "Super" models, with the addition of a three-drawer food file to their standard equipment.

Cabinets are streamlined, with double decorative beads through the center of front door and panel, black buffet top, and detachable black wide-leg base spaced at front and rear for easy cleaning beneath the cabinet. Dulux is used as exterior finish on all models.

Hardware is also streamlined, semi-concealed, with positive door-latch mechanism, and satin chrome finish.

Shelves are of the flat-bar type, spaced closely to prevent tipping of small containers. All models save the largest have "swinging" shelves, which tip up to allow for storage of milk bottles or other tall containers. Interior of the cabinets is finished in porcelain, with corners rounded for easy cleaning.

Sanitary's new "Hydrocold" evaporator is made by Universal Cooler, and is similar in operation to the cooling unit used in the 1936 Universal Cooler models. There is said to

(*Concluded on Page 4, Column 4*)

Universal Cooler Cuts First Quarter Loss

DETROIT—Universal Cooler Corp., for three months ended Dec. 31, 1935, reports a net loss of $82,125.26, which compares with a loss for the same period in 1934 of $138,173.21.

The corporation's fiscal year ends Sept. 30, and the three months being reported upon constitute the first quarter of its fiscal year.

Because of the seasonal nature of the industry, the first quarter of the fiscal year is normally one of low production and of losses, President Frank S. McNeal pointed out in issuing the report.

Frigidaire Adopts Hermetic Unit As Standard; Campaign of 'Proof-Selling' Launched

Grunow Reorganization Hearing Set for Mar. 17

CHICAGO—The motion to confirm the plan of reorganization for General Household Utilities Co. under Section 77-B of the Bankruptcy Act has been continued by Federal Judge Phillip Sullivan to March 17.

The same time has been set for the final date on which objections to claims may be filed.

Pending reorganization under Section 77-B, the business is being operated by trustees appointed by the court.

Five-Year Warranty Given Without Extra Charge by Coldspot

CHICAGO—The hermetically sealed refrigerating system in the 1936 "Coldspot" electric refrigerators will be covered by a 5-year service warranty, officials of the appliance department of the mail-order house have announced.

There will be no added charge to the previously announced retail list prices for the 5-year service protection. Prices are as follows: 4-cu. ft. standard model—$94.50; 6-cu. ft. standard model—$124.50; 6-cu. ft. deluxe model with Dulux finish—$149.50; 6-cu. ft. deluxe model with porcelain finish—$169.50; 8-cu. ft. deluxe model with Dulux finish—$169.50; 8-cu. ft. model with porcelain finish—$189.50.

The standard models do not have the cabinet styling and all of the features of the deluxe models.

The 5-year service warranty on the Coldspots covers all parts of the refrigerating system with the exception of the controls and the condenser fan. It does not exclude the evaporator, as was erroneously reported elsewhere.

Most of the servicing on the Sears' sealed unit has been on a unit replacement basis—that is, the unit is taken out of the cabinet and sent to the factory for repair, meanwhile being replaced by a unit kept on hand at the retail store for such purposes.

Five-Year Protection Plan Included in Purchase Price of 16 Models

DAYTON—Featuring the "meter-miser," a new hermetically sealed rotary compressor, a five-year protection plan, and a "proof-selling" plan of merchandising, Frigidaire Corp. this week introduces, through its 6,000 dealer stores, a line of household electric refrigerators for 1936 in 16 models, ranging in size from 2.1 to 18.3 cu. ft. net capacity.

In connection with its "proof-selling" campaign, Frigidaire has designed its units to meet what it terms the "five standards for refrigerator buying." These standards are:

1. Lower operating cost.
2. Safer food protection.
3. Faster freezing—more ice.
4. More usability.
5. Five-year protection plan.

To prove that their product meets these standards, Frigidaire dealers will be supplied with proof materials, an easy-to-read electric meter, to indicate just how much current the refrigerator uses; a thermo-gauge, to show fast-freezing capacity; and a "food safety indicator," placed in the food compartment of each model as standard equipment. The five-year protection plan is included in the purchase price of the units.

Backbone of Frigidaire features is the "meter-miser," a hermetically sealed rotary unit, in process of development for several years, and claimed to cut current costs "to the bone." This unit is the basis of the company's 1936 advertising and selling campaign.

Frigidaire dealers will be encouraged to ask prospects to check Frigidaire's points against competitive claims, and, so far as Frigidaire is concerned, to inspect personally operating displays involving light bulbs, current-recording meters, thermo-gauges, and cut away models of the compressor, showing its simplicity of design, and its three major moving parts in action.

Styled to harmonize with the modern trend, yet not "faddish" in design, the 16 Frigidaire models for 1936 are headed by the Imperial and Premier, two deluxe models of 10 and 13-cu. ft. capacity, for the luxury market.

The "Super" series, five models from 4 to 9-cu. ft. capacity with porcelain exteriors, and the "Master" series, four models from 4 to 7-cu. ft. in size, with exteriors of Dulux, make up the major portion of the line. Three WP models, of 12, 15, and 18-cu. ft. capacity, and two special smaller sizes, 3 and 2 cu. ft., are intended to meet the needs of special markets.

The "meter-miser" is standard equipment throughout the line, except in the oversize models for special purposes, and for direct-current areas. Installed in the base of the cabinet, the "meter-miser" has only three major moving parts. These are permanently sealed in oil, and completely protected against moisture and dirt.

Every 1936 Frigidaire will carry in its center shelf a "food safety indicator," so that the housewife may determine instantly at any time the exact temperature of the food compartment. This indicator, a Frigidaire development tested during 1934 and 1935 in the Fort Worth-Dallas territory, has three zones—freezing, safety, and danger. The "safety zone" is between 32 and 50° F.

The new models are said to have ample ice-freezing capacity, and the middle evaporator shelf lifts out, to provide room for frozen dessert trays.

Greater usability on this year's

(*Concluded on Page 4, Column 1*)

Westinghouse Entertains 150 Leading Salesmen at Two Plants

By T. T. Quinn

MANSFIELD—One hundred and fifty "Quota Busters," cream of Westinghouse's 1935 sales crop, began Monday a three-day tour of the company's Mansfield and Springfield (Mass.) plants, as a reward for the record-breaking sales work they did last year.

The men spent Monday and Tuesday at Westinghouse's plant here, studying cabinet production methods and hearing speeches of commendation and advice by officials of the merchandising division.

Tuesday afternoon they left for Springfield, to spend Wednesday touring the company's plants there, and obtain information on the manufacture of condensing units.

Monday's meeting, presided over by Gil Baird, sales promotion manager, was opened with an address by Ray C. Cosgrove, manager of household refrigeration sales, in which he congratulated the quota busters for inspiring other salesmen to help Westinghouse establish "the best record of improvement in the refrigeration industry last year." Westinghouse 1935 refrigeration business, Mr. Cosgrove said, was 48 per cent better than in 1934.

P. Y. Danley, manager of the refrigeration and air-conditioning department, also praised the men for their 1935 sales records, as did R. E. Imhoff, sales manager of the merchandising division.

Monday afternoon, the quota busters visited "Ranch No. 1," the company's Mansfield plant, watching the "Golden Jubilee" cabinets being transformed from steel sheets into gleaming white units of porcelain and Dulux in their journey down the assembly line. At the plant, the men were addressed by A. E. Allen, vice president in charge of the merchandising department; C. L. Van Derau, works manager; and Ralph Bisbee, chief inspector.

Monday night's program was devoted largely to entertainment, preceded by a banquet at which Quota Buster officers were presented with gold watches as tokens of their outstanding sales work.

Tuesday was turned over to more discussions of sales and sales promotion work, with P. C. Wilmore, Roger Bolin, V. E. Vining, department store sales manager, Mr. Cosgrove, and Mr. Baird as speakers.

Late Tuesday afternoon, the party left for Springfield, where Wednesday was scheduled to be devoted to inspection of "Ranch No. 2," the Springfield plant. Program for the day included speeches by L. M. Osborn, J. H. Ashbaugh, G. F. Fortshoefel, W. B. Anderson, R. E. Kruck, and M. Kalischer of the company's Springfield staff.

C. H. Brock, Western Public Service Co., Chadron, Neb., will be "Rancher" of the Quota Busters' Club during 1936, having won this title by piling up the greatest per-

(*Concluded on Page 28, Column 3*)

Dessent Handles Copeland Commercials in Chicago

CHICAGO — Dessent Engineering Co., 61 E. Austin Ave. here, has been appointed distributor for Copeland commercial refrigeration equipment.

The new distributor has been engaged in engineering sales and service here for the past 20 years.

Eshelman to Distribute F-M Appliances

LANCASTER, Pa.—Eshelman Supply Co. here has been appointed distributor for Fairbanks-Morse electric refrigerators, washers, ironers, and radios.

The distributor introduced the 1936 F-M lines to dealers in its territory at a recent meeting.

CALIFORNIA EXPOSITION PICTURES & SAN DIEGO SURVEY IN THIS ISSUE

Gimbel Opens Dept. Selling Coldspots

NEW YORK CITY—Gimbel Bros. department store here has opened a "Coldspot" department on its major appliance department floor in which the Sears, Roebuck & Co. line of household electric refrigerators will be displayed and sold exclusively.

Other refrigerators will be displayed in the major appliance department, but not in the Coldspot section. Salesmen working in the Coldspot section will not sell in other parts of the appliance floor.

Exact terms of the arrangement between Sears and Gimbel Bros. have not been divulged, but it is known that the man in charge of the Coldspot sales operations formerly operated in one of Sears' retail stores.

Moser & Suor Open '36 Selling Season with Training Meeting

KANSAS CITY—A sales training course, and dealer meeting marked the beginning of this year's campaign by Moser & Suor, Inc., Norge distributor here.

With a 50 per cent increase in its sales force, the company gave its sales staff a training course from Dec. 20 to Jan. 6 at the Ambassador hotel here.

The 1936 Norge line was introduced to dealers at meetings in Kansas City, Joplin, Mo., Wichita, Kan., and Hays, Kan.

Two movies, "The Harvest Year," showing the distributor meeting, and "The Restless Urge," a comedy, will be used in the Missouri and Kansas territory in dealer showrooms, and theaters, declares Ralph Smith of the distributorship.

Ice Cubes---Quickly & with No Mess

Getting ice cubes out of trays is no longer a problem with the modern refrigerator, as this housewife demonstrates with a rubber-grid "Quickube" tray from a 1936 Frigidaire model.

S-W Refrigerator Sales Gain in January

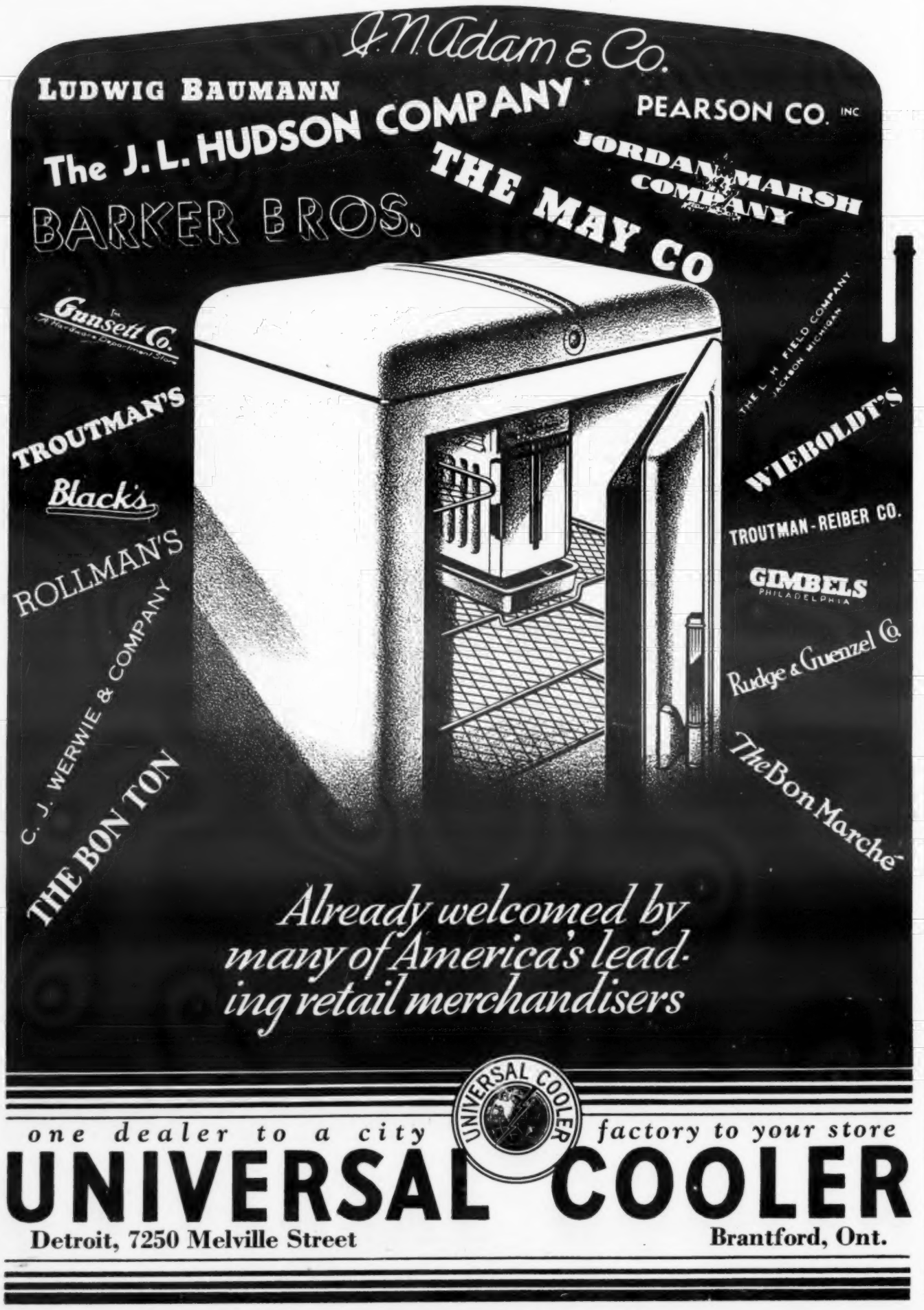
CHICAGO—Sales of Stewart-Warner electric refrigerators during January were 155 per cent more than during the same month last year, President J. E. Otis of Stewart-Warner Corp. reports.

Figures for the first half of February indicate that this month's sales will exceed last February's total by at least 200 per cent, Mr. Otis says.

Dealer Aims Campaign At War Veterans

NASHVILLE, Tenn.—"You Pay Us When Uncle Sam Pays You," will be the sales slogan for a campaign on war veterans started here by Lou Lusky Co., refrigerator distributor.

Refrigerators or home furnishings will be delivered and installed by the company with no down payment and no obligation to pay until the government pays the veterans' bonus.



Nema to Confer with Trade Commission On Fair Practice Rules

NEW YORK CITY—Board of governors of National Electrical Manufacturers Association has been notified that the Federal Trade Commission has acted favorably upon its application for a trade practice conference under the FTC's auspices.

Before a set of trade practice rules are submitted to the Commission for its consideration, the proposed rules will be submitted to all sections of Nema and then approved by the Nema policies division.

The report of C. L. Peirce, Jr., chairman of the Federal Trade Commission committee of Nema, presented to the policies division at the Feb. 6 meeting, explains the aims of the proposed trade practice conference as follows:

"Dr. Willard Thorp, in his talk on 'Electrical Products Prices Are Not So Simple,' has mentioned the confusion which has existed over the possibilities of joint action by members of industry. We have been at sea for months now as to just what we could do to straighten out some of our economic difficulties.

"Some of the groups in Nema are still using some of the devices which were put into effect under the late NRA. Whether they are continuing to use them rightly or wrongly, we really do not know, and we have had no clarification from Washington.

"During the past few months quite a number of sections of Nema have asked the board of governors for permission to ask the Federal Trade Commission for a fair trade practice conference for the particular group. The board has considered each of these applications and has not felt it wise to give permission for independent action.

"It is quite apparent that, under the leadership of Col. Charles H. March, the Commission wants to give constructive leadership to industry.

"When that was reported to Nema, it was arranged that there should be conferences between members of the Commission and representatives of individual Nema members, not, however, in any way representing Nema. These representatives went down representing their particular clients, the companies for whom they acted individually.

"Those representatives contacted all of the members of the Federal Trade Commission except Mr. Ayres, who has been seriously ill. I might say not only the members, but many of the members of the underlying staff of the Commission.

"These representatives have brought back the very positive statement that they were received in a very helpful and constructive attitude by all of the members of the Commission.

"Based on these conferences it is our belief after getting all of these various viewpoints that the time has come when there is at least a strong possibility of arriving at something really constructive through such a conference.

"We base this belief not only on the reports of these representatives, but also on the fact that two industries have succeeded in getting rules under which they have been operating now for some time, and have received great benefit from those rules—the wholesale tobacco industry and the wholesale drug industry.

"Dr. Thorp mentioned the fertilizer industry.

"They have presented to the Commission a most constructive set of rules and that has been done after many months of conferences between representatives of the fertilizer industry and the Commission.

"Apparently, the Commission is giving friendly consideration to the proposed set of rules. If those rules as submitted, are approved by the Commission, it will assist in the elimination of many of the subversive practices in the fertilizer industry, and it is our judgment that a similar set of rules, if they could be adopted for the electrical manufacturing industry, would have an equally beneficial effect.

"The Commission may not, however, act on the fertilizer industry's proposed rules until after the Supreme Court has given its decision on the sugar case which, of course, will clarify the whole situation.

"Perhaps it would be well just to go over what these fair trade practice rules are. They are divided into two groups.

"Group 1 consists of rules that state in the terms of a particular industry what the law is. We are working under it right now, but the rules will clarify the law. These group 1 rules, while they impose no new obligations except those which already exist under the law, will, of course, apply to all of the members of the industry.

"The group 2 rules are a statement of practices which the industry desires to adopt and which the Commission believes will be beneficial and not unlawful. Some group 2 rules might be adopted by the industry as a whole, but many would be adopted only by certain groups and sections.

"When the rules are finally approved by the Commission, no one is bound by them except to the extent that he is now bound by law and each member may decide for himself whether he will sign the card of assent furnished by the Commission. It is entirely a voluntary action on the part of each individual.

"However, it is the belief of your committee that the clarification of our members' obligations will be productive of better compliance with the law and elimination of many unfair practices."

Price Cut & Acceptance of Produce Made Sales For Georgia Dealer

GREENSBORO, Ga.—A 10 per cent price cut, a $2-down plan, and the acceptance of farm produce on refrigerator payments sold 33 household refrigerators during Easter week last year for the Greensboro Appliance Shop here.

Beginning 10 days before Easter, a 10 per cent cut on all refrigerators was announced. With this, the dealer offered installations with only $2 down, and 60 days before the next payment was due. At the end of that period if the purchaser decided not to keep the refrigerator he could return it and get the deposit back.

Two weeks before the bargain became effective, Robert Ramsey, head of the dealership, advertised in the local paper, stressing the value of a refrigerator during the hot summer months, the low operating cost, and the small deposit for a 60-day trial.

Hand-bill advertising for the rural routes supplemented the newspaper announcements, and special store window displays were set up.

To give the farmer a chance to keep up payments during the summer, the dealership accepted one half of each month's payment in chickens, eggs, vegetables, or other farm products that could be sold at local markets. Advertisements sent directly to rural areas emphasized this feature.

One prospect brought her two married daughters in and they all bought refrigerators on this plan, each selling enough chickens to keep up summer payments.

This year, Mr. Ramsey will vary his methods and starting March 30 will use a display truck to interest country prospects.

Denby, Conn., Store Will Sell Frigidaire

DERBY, Conn.—Howard & Barber Co., department store at 268 Main St. here, was recently appointed representative for Frigidaire household refrigerators.

12 Refrigerator Lines To Be Exhibited at Camden Show

CAMDEN, N. J.—Dates for the sixth annual Spring Refrigerator Show sponsored by the Electrical League of South Jersey have been tentatively announced by Isador Bornstein, chairman of the league's refrigeration committee, as from April 1 to April 4.

A total of 120 models of refrigerators manufactured by a dozen companies will be exhibited in the show, in the Public Service Building here.

During the four-day show last year local and suburban dealers sold 234 units worth $35,000, it was reported.

Mr. Bornstein also announced the names of the league's refrigeration board members. They are: William Fulton, John Young, James Dwyer, William Polk, Norman Middleton, William A. Major, A. A. Duckett, Melvin Ruttenberg, Howard Suckling, and Benjamin A. DeYoung.

Hartford Dealer Wins Award from Utility

HARTFORD, Conn.—S. K. Lavery, 997 Farmington St., West Hartford, received the Samuel Ferguson Banner awarded by the Hartford Electric Light Co. to the dealer building the greatest volume of major appliance sales during the month of December. The utility staged a December contest on electric refrigerators, ranges and water heaters, naming the award after the chairman of its board.

Lavery Co.'s four salesmen were given "ace" pins for salesmanship.

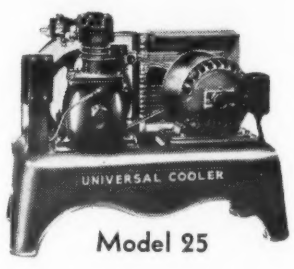
Eckstein Will Manage Cutler-Hammer Branch

CLEVELAND—R. J. Eckstein was recently appointed manager of the Cleveland branch of Cutler-Hammer, Inc., of Milwaukee, manufacturer of electrical control apparatus.

Mr. Eckstein has been with the company 25 years, starting in the Milwaukee plant in 1911.

★ New 1936 Models COMMERCIAL REFRIGERATION EQUIPMENT

"Built by Universal Cooler"



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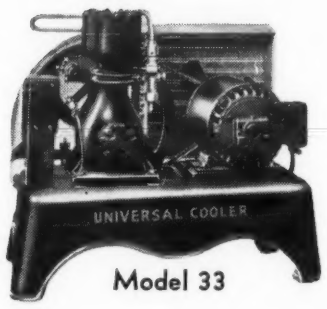

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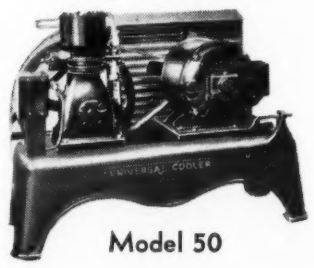
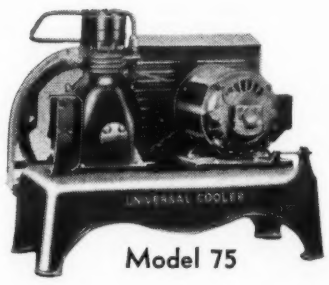


Model 50



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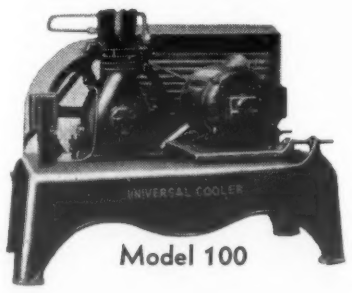

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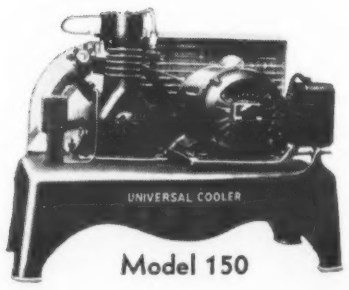

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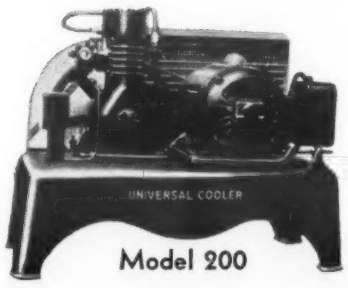

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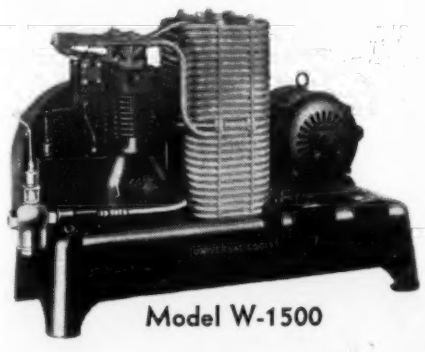
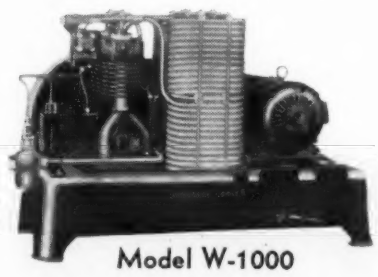
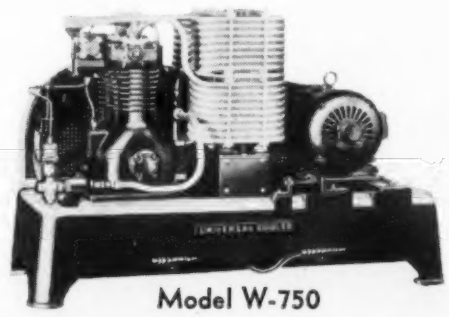


Model W-1500



Model W-1000



Model W-750

12 Points of Excellence

1 "Valve in Head" compressor design with no refrigerant passing through compressor oil.

2 Increased condenser capacities and efficiencies.

3 Every unit listed with three speeds for highest capacity at low, medium or high suction line temperatures.

4 Standard and special units for all refrigeration applications requiring Methyl Chloride or Freon making available a total of 157 units ¼ to 15 H.P.

5 New drives for all models designed by leading transmission engineers.

6 Increased capacities and efficiencies on every model.

7 Compressor design simplified to facilitate maintenance.

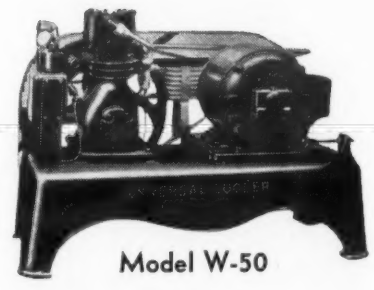
8 Controls wired on all remote type units.

9 Overload protection incorporated in control on all units.

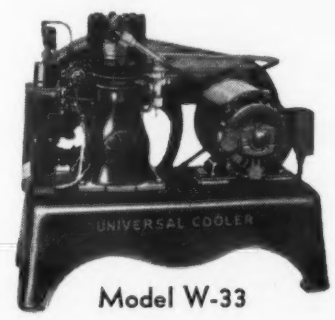
10 Rigid, permanent "drum proof" cast iron bases.

11 Starters mounted and wired on all 1½ and 2 H.P. units.

12 Double tube condensers on all water-cooled units reducing water consumption and condensate temperature, thereby increasing capacity and economy.



Model W-50



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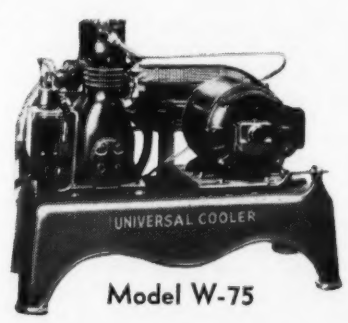
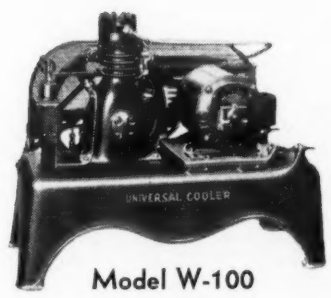
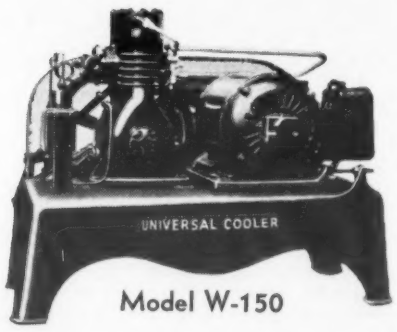


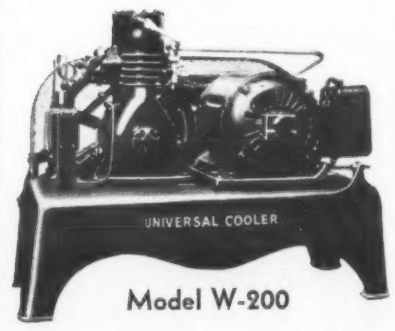
Model W-75



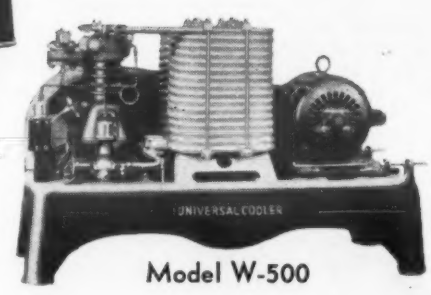
Model W-100



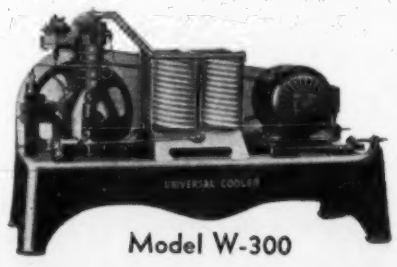
Model W-150



Model W-200



Model W-500

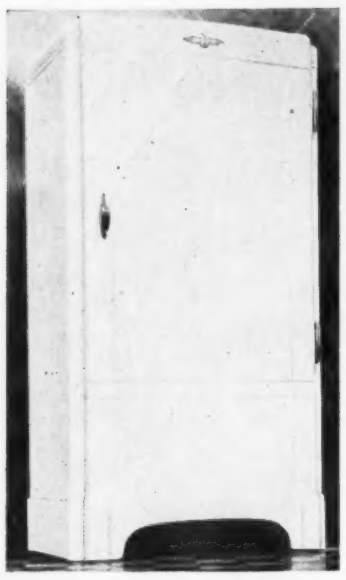


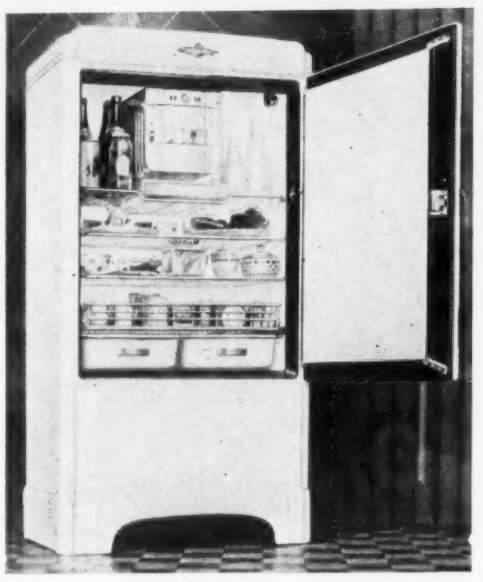
Model W-300

UNIVERSAL COOLER

Detroit, Mich. **Brantford, Ont.**

Specifications of 1936 Frigidaire Line





Model No.	Storage Capacity Cu. Ft.	Shelf Area Sq. Ft.	No. of Ice Trays	No. of Cubes	Lbs. of Ice	Exterior Dimensions Height	Width	Depth
Super 9-36	9.1	19.3	6	136	14	60¼	32¼	27½
Super 7-36	7.24	15.8	6	120	12	59¼	31	25
Super 6-36	6.24	13.6	4	82	8	58¼	29¾	25
Super 5-36	5.1	10.7	4	82	8	54½	28	25
Super 4-36	4.1	8.9	2	41	4	50¼	24¼	25
Master 7-36	7.24	15.8	6	120	12	59¼	31	25
Master 6-36	6.24	13.6	4	82	8	58¼	29¾	25
Master 5-36	5.1	10.7	4	82	8	54½	28	25
Master 4-36	4.1	8.9	2	41	4	50¼	24¼	25
D3-36	3.1	6.4	2	41	4	44¼	22½	22½
Koldchest	2.1	4.1	2	36	3	36	23¾	20½
WP 12-36	12.1	24.6	6	156	19	60¾	38¼	30½
WP 15-36	15.1	29.4	8	208	25½	64	46¾	30½
WP 18-36	18.3	33.8	6	144	20¼	71½	46¾	29½
Deluxe Imperial	10.0	19.6	6	156	19	63¾	38¼	30
Deluxe Premier	13.1	26.6	6	156	19	64	46¾	30½

Many Changes Made On Frigidaire Line

(*Concluded from Page 1, Column 5*)

Frigidaires has been obtained by widening the cabinet, and making it more shallow, bringing "back-shelf" space to the front. Doors are interior-of-cabinet width, making the unit itself a regular "refrigerated pantry." There is ample space for all sizes of packages, cans, containers, and bottles, as well as for bulk foods.

Portable utility shelves, which slide out so that they can be used between the refrigerator and the kitchen table, are features of all "Super" models. Full-width sliding shelves are standard equipment with both "Super" and "Master" models. All models have improved hydrators, "Super" models this year being equipped with two.

The evaporator, or "Super Freezer," has been redesigned this year, so that refrigerant flows inside all walls. All ice trays are on shelves. A removable shelf makes it possible to make room for roasts, bulk ice cream, and other large items.

Automatic ice tray release is standard equipment throughout the line. Quickube ice trays, with rubber grids, are standard for "Super" and larger models.

Cold control has been moved inside the cabinet, at the top of the "super freezer," as has the automatic reset defroster. Design of the food compartment is such that five kinds of cold are available—fast freezing, frozen storage, extra-cold storage, moist storage, and normal storage.

The five-year protection plan covers the mechanical unit against any service expense. In addition, a one-year warranty covers the cabinet and other equipment. The cabinet itself is a welded steel shell, permanently sealed to protect insulation against moisture and deterioration.

This "proof-selling" theme will be the burden of Frigidaire's 1936 advertising campaign, featuring the "metermiser," and said to be the widest in coverage, which the company has ever attempted.

Carrying the attention-attracting lines "Backed by Proof," "Buy on Proof," and "You Can't Beat Proof," advertising, placed by Lord & Thomas, will break March 8 across the nation.

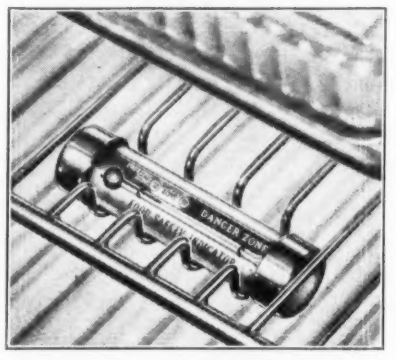
Magazines on the 1936 schedule include *Collier's, Saturday Evening Post, Ladies Home Journal, Good Housekeeping,* and *Literary Digest. The American Weekly,* supplement of the Hearst Sunday newspapers, and *This Week,* supplement of 26 other Saturday and Sunday papers will be used consistently, as will the rotogravure sections of strategically located papers in areas where additional representation is necessary.

To provide coverage in communities not served adequately by the mass circulation publications, a large dealer-cooperative advertising campaign will be launched. This provides for display advertisements placed by dealers in daily and weekly newspapers serving individual dealer and store markets and for outdoor billboards, local radio station spot announcements and programs.

Showroom backgrounds and window displays pounding away on the "proof of standards" story will break out simultaneously in the nation-wide unveiling.

Other selling and advertising material consists of the usual catalogues, a rotogravure folder, bill inserts, recipe book, the Key to Meal Planning, and special pamphlets on special models.

Safety Indicator



All Frigidaire models will be equipped with this indicator.

Birmingham Bureau Outlaws Free Trial Of Refrigerators

BIRMINGHAM, Ala.—Election of officers and adoption of a new code of ethics which includes outlawing free home demonstrations marked the first 1936 meeting of the Birmingham Electric Refrigeration Bureau.

C. R. Matthews of the Matthews Electric Supply Co., General Electric distributor, was elected president, succeeding John Shaw, of Moore Handley Hardware Co., Westinghouse distributor.

Other officers are: vice president, E. D. Henley of Birmingham Electric Battery Co., Norge distributor; secretary-manager, Ira F. Randall; members of the legislative committee, E. E. Forbes, R. P. McDavid, and John P. Newsome.

The new code of ethics provides a minimum cash payment on refrigerators of $10 plus $5 allowance for ice-boxes.

The provision which forbids free home demonstrations excepts the Birmingham Electric Co., which will be permitted to demonstrate its present "Liftop" refrigerators for a period of not more than five days. Otherwise, no refrigerator may be delivered, according to the agreement, until the contract is signed and the cash payment made.

The utility has agreed to take back the "Lift-top" and cancel the balance due by a customer provided a larger box is purchased.

Any dealer breaking up a sale after the contract has been signed and the initial payment made shall be regarded as breaking the code.

To cover the cost of installing base plugs, members of the bureau also voted a $5 addition to the price of refrigerators.

"Knocking competitors' products by the dealer, or by the dealer's salesmen is prohibited both in selling and advertising," says the code. "Advertising copy offering reduced prices on old models, trade-ins, or repossessed refrigerators must state clearly the condition of the merchandise."

Premiums or bonus merchandise are also forbidden by the code unless they are furnished by the manufacturer as part of the standard equipment.

Dealers and their salesmen are expressly prohibited by the agreement from commercializing religious organizations by offering a part of their commissions for prospects sold. No discounts will be allowed to any organized or cooperative buying group.

Standard discounts are provided for city, county, or state institutions of 15 per cent on sales of 4 to 12 units, 20 per cent on 12 to 20 units, and 25 per cent on 20 to 50 units.

Dealers will be required to furnish names of persons from whom refrigerators have been repossessed, so that this information may be distributed to other members of the bureau, according to the new rules.

Dealers are further pledged not to "swipe" salesmen from other dealers and not to employ salesmen who leave another dealer with a bad record.

'Double-Flue' Cooling Unit Featured in Sanitary's Line of 5 Models

(*Concluded from Page 1, Column 3*)

be no visible accumulation of frost on the cooler, and its effective surface has been more than doubled.

A separate circulation is set up along two sides of the cooler, the heat being taken up by cooler plates, proper humidity being maintained at the same time for the crisp preservation of leafy foods, and cabinet temperatures being kept at uniform levels throughout.

The food file in "Super" models is a three-drawer affair, the left-hand drawer including three left-over dishes, glass-covered, the center drawer being a porcelain hydrator, and the right-hand drawer a dairy basket for the storage of cartons and small food articles.

Drawer fronts are solid brass chrome, satin-finished, with a streamline design embossed and highlighted to harmonize with the streamline design of the cabinet front.

Model 42, smallest in the line, has a storage capacity of 4 cu. ft. and a shelf area of 8.5 sq. ft. There are two ice trays, turning out 36 cubes, 2⅔ lbs. of ice, per freezing.

Model 55 has a capacity of 5.25 cu. ft. and a shelf area of 11.04 sq. ft. It has four ice-cube trays, capable of producing 58 cubes, or 4½ lbs. of ice, at a freezing.

Model 72 has a storage capacity of 6.7 cu. ft. and a shelf area of 14.5 sq. ft. The five ice trays in this model produce 77 cubes, or 7 lbs. of ice, per freezing.

Next model, 86, has a capacity of 7.7 cu. ft. and a shelf area of 17.2 sq. ft. It has six ice trays, which have a capacity of 133 cubes, or 11½ lbs. of ice, per freezing.

Largest in the line is Model 99, with a capacity of 8.7 cu. ft. and a shelf area of 20.25 sq. ft. Its ice-cube capacity is the same as Model 86, although it has one more tray. A two-door unit, Model 99 in the "Super" series, has its hydrator directly beneath the ice-cube compartment. Other "Super" models have the food file together at the bottom of the cabinet.

Sanitary Specifications

Model No.	Storage Capacity Cu. Ft.	Shelf Area Sq. Ft.	No. of Ice Trays	No. of Cubes	Lbs. of Ice	Exterior Dimensions Height	Width	Depth
42	4.0	8.5	2	36	2⅔	47½	23½	20¾
55	5.25	11.04	4	58	4½	51¾	24¼	23
72	6.7	14.5	5	77	7	53¼	28½	25
86	7.7	17.2	6	133	11½	60½	29½	25½
99	8.7	20.25	7	133	11½	60½	33¾	25½

Models 77½, 86½, and 99½ have the same capacities as Models 72, 86, and 99, except that they are equipped with a three-drawer food file and are known as "Super" models.

FHA Loan Collection Policy to Be Strict, Administrator Says

WASHINGTON, D. C.—"The policy of the Federal Housing Administration in collecting defaulted obligations on FHA loans will be just as rigid as that of the Treasury Department in the collection of taxes," Administrator Stewart McDonald has declared.

Mr. McDonald made his statement because of "a general misunderstanding concerning the policy of the FHA in handling cases of default on loans."

When a borrower under the modernization credit plan defaults on a loan, the insured lending institution files claim with the FHA for the insurance on the loan. The matter of collecting the defaulted obligation then is turned over to the FHA.

"The collection machinery is well organized, and, while every reasonable consideration will be given to borrowers in default, the public must not get the impression that FHA will be lax," said Administrator McDonald.

"There is no reason to assume that borrowers in default will be treated like tax evaders, but rather along the same lines as an individual who is in default of tax payments."

Universal Cooler of Canada Shows Profit Of $34,192 in 1935

BRANTFORD, Ont., Can.—Universal Cooler Co. of Canada, Ltd., showed a net profit for the year just closed of $34,192.09, after deduction of all charges including income tax.

This compares with a net profit of $12,724.27 for the previous fiscal year.

Sales of Universal Cooler refrigeration equipment in Canada for the past fiscal year were 22.7 per cent greater than sales in the previous fiscal year.

Current assets were placed at $168,422.51, and current liabilities at $13,702.44, a ratio of better than 12 to 1.

Officers of the company elected to serve during the coming year are: president, E. A. Wilson; vice president, F. S. McNeal; general manager, Dan Robertson; treasurer, George Wiseman; secretary, Howard Gray.

Members of the board of directors are: Mr. McNeal, Mr. Wilson, Mr. Robertson, Scott Lyn, M. W. Waddington, A. H. Sarver, and E. C. Lewis.

Predicts Electrification of 175,000 Farms in '36

WASHINGTON, D. C.—Through REA projects, and through private utility expansion programs, 175,000 farms will be electrified during 1936, predicts Morris L. Cooke, administrator of the Rural Electrification Administration, who estimates that private utilities will spend approximately $50,000,000 on rural electrification this year.

This program is in marked contrast with the extension of service to 83,000 farms in 1935, and 30,396 in 1934. Approximately 827,000 rural customers of a possible 6,800,000, are now receiving service, Mr. Cooke states.

He recently gave final approval on the construction contracts for four projects financed by the federal agency, enabling work to be started on 650 miles of line. Contracts approved were those of the Indiana State-Wide, Miami Rural Electric, Shelby Rural Electric, and one privately owned line—the Bartlett Community Light & Power.

The Florida Power Corp., a privately owned utility recently received approval on a loan for $164,500 to place 184.6 miles of line in 21 sections of northern and western Florida.

Four to Assist FHA on Insurance Provisions

WASHINGTON, D. C.—Appointment of four assistant deputy administrators to aid in the administration of the mortgage insurance provisions of the National Housing Act was made known recently by Stewart McDonald, Federal Housing administrator. They are Raymond T. Cahill, Thomas W. Ellett, W. E. Lockwood, and Clyde L. Powell.

All four will serve directly under William D. Flanders, deputy administrator in charge of Titles II and III, with offices here.

'You Can Take the Shelf Out and Put It on a Table - -'

Refrigerators in years past have had sliding shelves and removable trays, but Frigidaire goes the whole hog this year with an entire shelf (built with side guards) that can be removed and used as a tray.

San Diego Survey Shows Relation Of Income to Ownership Of Refrigerators

SAN DIEGO—The important part which income differences play in the purchase of electric refrigerators and other household appliances is clearly brought out in the seventh of a series of Department of Commerce surveys, covering consumer use of a selected list of goods and services in San Diego, a city of 51,198 families.

The survey, which has just been released, covers, in addition to refrigerators, the saturation percentages of building materials, heating apparatus, installed bathing facilities, lighting, heating, and cooking facilities, and automobile ownership in the city.

Although the number of families in San Diego in 1934 was 51,198, the report is based on 1930 census figures, which showed a family population of 45,227. While the sample used as the report's basis is small, 7,538 families or 16.7 per cent, it was carefully selected and is believed to be statistically sound.

Three-Fourths in Single Homes

The report shows that approximately three-fourths of San Diego families live in single-family houses. Wood predominates as building material, with stucco second in importance. Because of the mildness of the climate, relatively few dwellings are equipped with central heating plants, although most homes have artificial heating facilities of some kind, with gas, wood, and kerosene as the principal fuels. Annual rents ranged from $198, in the lowest income class, to an average of $715 among families with incomes between $5,000 and $7,000.

As was found true in other cities, the lower-income families in San Diego far outnumber those with incomes above $2,000. Almost 40 per cent of the families had incomes (for 1933) of less than $1,000, and more than 80 per cent had less than $2,000.

Families with incomes below $1,000 for the year together occupied more than one-third of all single-family houses reported in the city, and over one-half of the apartments; used 21 per cent of the heating plants, almost two-fifths of the installed bathing facilities, 17 per cent of all mechanical refrigerators, and about one-third of the automobiles, when the survey was made.

The income classes between $1,000 and $3,000 outrank all other groups in the number of families using single-family houses, stucco construction, heating stoves and furnaces, fuel oil, gas, electricity, bathing installations, mechanical refrigerators, and automobiles.

16% Use Refrigeration

While lower income classes absorb a large percentage of the total market, the higher income groups contain fewer families that fail to use these products. All families with incomes of $3,000 or above have homes equipped with heating apparatus of some kind; all light with electricity; practically all use gas for cooking; more than 50 per cent have mechanical refrigerators, and less than 12 per cent fail to have one or more automobiles per family.

Mechanical refrigerators, the survey shows, are used by 16 per cent of all San Diego families, and by from 50 to 60 per cent of those families having yearly incomes of $3,000 or more. Families who occupy their own homes are considerably better equipped with this type of refrigeration than are tenants. The percentages are 18.5 for owner-occupants, and 13.6 for tenants.

Only about 17 per cent of the total number of mechanical refrigerators used in San Diego are in the homes of families that have incomes below $1,000; more than two-fifths (42.9 per cent) of the families with this equipment have incomes of $2,000 or above. The highest income group, composed of families with $7,000 incomes or above, has, as is to be expected, the highest proportion of mechanical refrigerators, 60.7 per cent.

Ownership by Income Classes

Because there are relatively few families in this group, however, it by no means takes the lead in total use of refrigerators. That distinction, on the basis of the actual number of refrigerators in use, is held by the group of families having incomes between $2,000 and $3,000. Any one of the other income groups ranks sufficiently high in percentage of families using refrigerators to outnumber consumers in the highest income class.

Percentages of families in the various income groups with mechanical refrigeration range from 60.7 per cent, for the $7,000 and over class, to 4.1 per cent, for the group in the $1 to $500 income range. Specifically, the percentages run:

$7,000 and over, 60.7 per cent; $5,000-$7,000, 52.3 per cent; $3,000-$5,000, 50.9 per cent; $2,000-$3,000, 31.7 per cent; $1,500-$2,000, 20.9 per cent; $1,000-$1,500, 11.2 per cent; $500-$1,000, 8.1 per cent; $1-$500, 4.1 per cent; and "no income", 9.7 per cent.

Families with incomes between $1,000 and $3,000 comprise 63.9 per cent of all reported users of refrigerators; and, because of its greater size, even the lowest income class ($1-$500) has a larger share of San Diego's homes equipped with mechanical refrigerators than the highest income class (3.6 per cent as compared with 1.4 per cent).

No income class fails to have some members equipped with mechanical refrigerators, the distribution, as shown by the survey, being as follows: "No income", 2.1 per cent of the city's total; $1-$500, 3.6 per cent; $500-$1,000, 11.6 per cent; $1,000-$1,500, 17 per cent; $1,500-$2,000, 22.8 per cent; $2,000-$3,000, 24.1 per cent; $3,000-$5,000, 14.6 per cent; $5,000-$7,000, 2.8 per cent; and $7,000 and over, 1.4 per cent.

The demonstrated ability of a substantial portion of the families in each income class to purchase mechanical refrigerators indicates that there is an undeveloped potential in each group. Also, it may be remembered that, according to the figures given above, even the $7,000 and over income group has an undeveloped potential market of 39.3 per cent.

99.3% of Homes Wired

The city's real potential market, moreover, is shown by the fact that 99.3 per cent of San Diego's families live in homes wired for electricity. On this basis, the number of families who might use electric refrigerators would be practically the total number of families in the city. Since only about one sixth of the city's families do have electric refrigerators, however, it is evident that the availability of electricity is not the principal factor in determining refrigerator ownership. Income differences are a major consideration.

Most of the less-than-one per cent not using electricity are below $500 in annual income. More than 99.8 per cent of the families with incomes between $1,000 and $3,000, and all families above that amount, use the equipment. The $1,000 to $1,500 income class, being largest in number, is therefore also largest in number of electrically lighted homes.

There is no appreciable use of electricity for cooking; and almost 99 per cent of San Diego homes use gas for this purpose. Only eight of the 7,538 families covered in the survey reported that they cooked with electricity.

Autos Owned by 66%

Automobiles are owned by more than two-thirds of all families in San Diego, but less than 6 per cent of these families have more than one car. By comparing this information with data on refrigerators, it is seen that there are distributed among the same people about four and two-thirds times as many automobiles as mechanically operated refrigerators.

As might be expected, most of the families that have no car are in the low income groups. Slightly more than three-fifths of the no-car families have incomes under $1,000. Against this, however, is the startling fact that about 48 per cent of the families having incomes of less than $500 own a car—as well as more than half the families with incomes between $500 and $1,000.

Just how the survey showed mechanical refrigeration to stack up alongside the use of electricity for lighting and the ownership of at least one automobile is indicated in the following tabulation, which gives the saturation of each item in the various income classes:

Income Class	Refrigerators	Electricity	Automobiles
No Income	9.7	98.0	47.5
$1-$499	4.1	97.3	44.7
$500-$999	8.1	99.2	54.2
$1,000-$1,499	11.2	99.8	65.8
$1,500-$1,999	20.9	99.9	77.3
$2,000-$2,999	31.7	99.9	78.0
$3,000-$4,999	50.9	100.0	70.5
$5,000-$6,999	52.3	100.0	70.7
$7,000 & Over	60.7	100.0	50.0
All Classes	16.0	99.3	63.3

Utility Reports Sales of 3,421 Refrigerators in 'Holiday Circus'

NEW YORK CITY—Completely eclipsing the sales record built up during its 1934 holiday drive, the Utility Management Corp. and its properties sold a total of 3,421 electric household refrigerators during the "Holiday Circus" held Nov. 18-Dec. 21, according to final reports on the campaign just released by A. E. Ward.

This figure represents a gain of 1,449 units over the refrigeration sales in the corresponding activity of 1934.

In the gas appliance line, ranges were sales leaders with 3,187 units sold by the company and its dealers. Total sales of gas-operated refrigerators were 378.

Personnel Training Methods Given Tests for Effectiveness by Store Director

PITTSBURGH—Two tests applicable to any business are applied by Miss Caroline Spalding, training director of the Joseph Horne Co. here, to all her sales training methods. They are: Will this make the customer want to buy more? Will it help the employe to be more effective?

Miss Spalding outlined her methods at the convention of the National Retail Drygoods Association which closed recently in New York City.

In formulating her plans, Miss Spalding tries to keep a finger on the pulse of the personnel through "listening in" to those who are discouraged as well as those who have achieved a good service record, a good day, or a good bonus; to discuss casually and informally the shopping reports and rating scales with the sales person, or indirectly with the department manager who is given this responsibility; to study surveys made of customers to see how the store's standards of service and selling measure up to their expectations and demands; and to know what the management hopes to accomplish in merchandise and promotional plans.

Formal Meetings Time-Consuming

Finding that too many formal meetings were time-consuming in a 40-hour schedule, Miss Spalding adopted three well-defined ways to accomplish her objectives: the "task plan," the "self-development training program," and the "case method."

The task plan, she explains in brief as the assignment of a certain task to the individual to be worked out by himself, thus proving his knowledge.

A concrete example of this method is the review for reinstated salesmen given by Horne's. It includes brief questions on the essentials and changes in system, with emphasis on things which caused trouble or readjustments during the peak season.

Training on Points Needed

The review is immediately corrected and training given on those points needed. This serves as a definite check, is an economical time-saver, keeps customers from annoyance caused by ignorance, and supervisors from constant interruptions in following up errors, Miss Spalding finds.

Such a test makes the personnel realize what it is necessary to know, and that the essentials must be learned adequately and completely.

The most satisfying outgrowth of the plan, Miss Spalding says, is that it encourages so many persons to take an active part in making and carrying out their own programs of self-development, beyond what is required, thus leading into the second plan of self-development training.

For those who like to do organized college work, the store suggests the Retail Bureau's courses; and offers a series of short courses for those who would rather listen to interesting lectures on subjects related to their work.

Forum for Junior Executives

For the junior executives, there is the Retail Forum, where they plan their own meetings, choose their own speakers, and assign to each member a discussion of some current problem. With others, the store directs their reading by recommending and promoting suitable books.

Facts obtained for "case method" studies are commonly taken from the Research Bureau of Retail Training, which is located in Pittsburgh and gives the store a composite photograph of the opinions of the customers annually. Pointers from such studies are given more prominence in all of the training classes whenever there is a group together and the subject can be brought in.

After a recent survey of consumers' attitudes toward the store, Miss Spalding selected a group of best sellers to discuss the weaknesses found. They all agreed that their success had come about by doing this or that because they "knew their customers and what they would like." Thus the importance of a clientele was established.

Contests Found Effective

Contests such as "Do You Know Your Merchandise" contest were also found effective by Miss Spalding.

In such competition, every sales person is given a merchandise questionnaire on Monday morning, to be answered and submitted on the following Saturday. They can search anywhere for their answers. For one week it is a search after knowledge for selling. Displays and charts showing manufacturing processes are put in the employes' cafeterias, both for stimulation and publicity.

The entrants then receive, on Saturday morning, a second questionnaire, which contains 10 questions from the original one, to be answered from memory without help. The answers are judged on completeness, accuracy, and interesting presentation of facts. Small cash prizes are given, and the questionnaire returned to the sales person through the buyer.

The merchandise manager will then know what additional information is needed and will be better able to judge what to incorporate in his regular merchandise training. In such ways the importance of knowing merchandise is dramatized.

20 QUALITY FEATURES

(No. 6)

Servel's Oversize Discharge Valve Insures Durability and High Efficiency.

ASK THE SERVICE MAN...

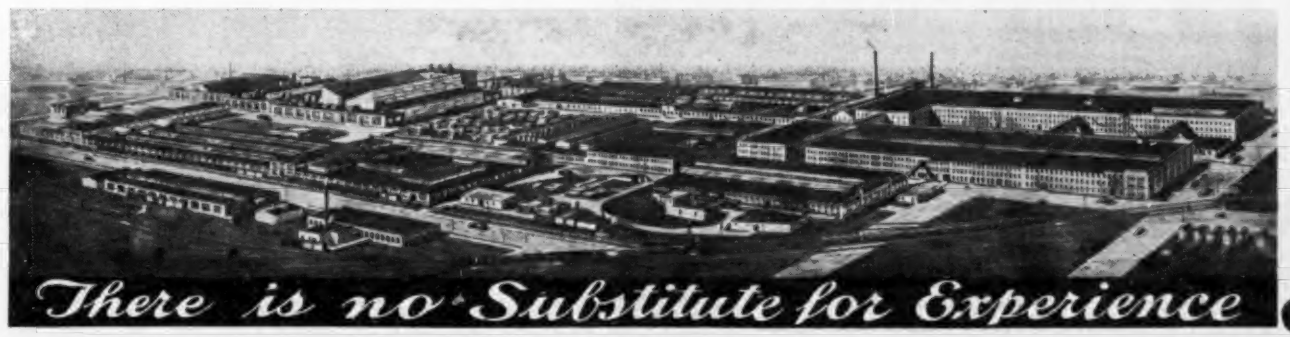
Any experienced service man will tell you emphatically that Servel Commercial Refrigeration and Air Conditioning products are all star performers . . . If he's been in the business for some time, he'll tell you about scores of Servel machines in your town that have been doing their job for six, eight, ten years or longer—and still going strong. He'll tell you that every year Servel has added refinements that improve performance and simplify his problem . . . Servel dealers everywhere are enjoying larger net profits every year because of *earned acceptance*. Direct factory sales agreements will be made in several good trading areas in the next few weeks.

SERVEL

COMMERCIAL REFRIGERATION

SERVEL, INC. *Commercial Refrigeration Division* EVANSVILLE, IND.

This modern 33-acre plant is the home of Servel Commercial Refrigeration and the world-famous Electrolux, the Servel Gas Refrigerator



DIRECT

THE NEW FRIGIDAIRE with the

Frigidaire launches its 1936 selling season with the most sensational new model, the most dynamic selling plans, in its entire history

● For months Frigidaire has been waiting for this day. For months feverish excitement has been growing . . . mounting toward the day when this smashing announcement could be made. And now Frigidaire proudly displays its sensational 1936 product — the New Frigidaire with the Meter-Miser. With it, Frigidaire introduces the most powerful, the most dramatic selling program ever devised to support a new product. The New Frigidaire is *new*... from stem to stern. And the plans that will help you sell more than you have ever sold before, are new plans . . . new methods for getting a greater share of refrigerator sales. The product, the plans, the sales program . . . everything . . . is set for the biggest year on record. Remember this slogan: "You'll Do Better with Frigidaire in '36!"

Buy on Proof!

For the first time in the industry, refrigerator prospects need not be forced to make their decision on blind faith or unsupported claims. Frigidaire's dramatic 1936 program provides a definite basis of comparison for buying an electric refrigerator the *Right Way*—on its ability to meet All Five Standards for Refrigerator Buying. Meeting one standard is not enough—for *complete* 1936 value your customers will demand *Proof* of All Five!

FRIGIDAIRE'S FIGHTING CHALLENGE THAT SIGNALIZES EVERY 1936 ACTIVITY

Frigidaire has wrapped up its new product in a new story—a dramatic, smashing, aggressive advertising theme! In 1936 Frigidaire says: "You Can't Beat Proof!" "Buy on Proof!" Frigidaire, and every man who sells Frigidaire will be able to give proof, visual, convincing proof, that Frigidaire meets All Five Standards for Refrigerator Buying! Here is a stirring advertising story that ties together both the advertising and the demonstration. This complete co-ordinated program is a mighty selling tool with which Frigidaire men will go to town in 1936!

With the greatest product in its history, with the most forceful selling and merchandising plans on record, Frigidaire offers you the opportunity of having the biggest refrigeration year in your experience.

THE NEW

FRIGIDAIRE WITH THE "METER MISER"

MEETS *ALL* 5 STANDARDS FOR REFRIGERATOR BUYING

GFB FRIGIDAIRE MADE AND SOLD BY GENERAL MOTORS

1. LOWER OPERATING COST
2. SAFER FOOD PROTECTION
3. FASTER FREEZING—MORE ICE
4. MORE USABILITY
5. FIVE-YEAR PROTECTION

●

MEET THE 1936 FRIGIDAIRE WITH THE "METER-MISER"

Look at the spectacular New Frigidaire with the Meter-Miser! Beautiful—eye-catching beauty! Crammed with new use-in-the-home conveniences. Wider, roomier, handier than ever! But even greater than these important selling features is the fact that *no refrigerator has ever performed as remarkably for so little operating cost!*

The Meter-Miser, Frigidaire's spectacular Cold-Making Unit, cuts current cost to the bone. What an astonishing economy story this will provide!

Frigidaire has built right into the product itself, selling features, unusual and compelling beyond all expectations. Beside the Meter-Miser there is the Food-Safety Indicator. A newly designed, handier-to-use, sealed Steel Cabinet, Sliding Shelves, Portable Utility Shelf, Automatic Interior Light . . . just about everything that has definite sales appeal—and this year Frigidaire has added the vital selling tool of a Five-Year Protection Plan for every purchaser of a Frigidaire.

This is the "*Meter-Miser*"

Frigidaire's new cold-making unit cuts current cost to the bone. Quiet . . . unseen . . . trouble-free. Hidden away where it cannot mar beauty, gives more cold for much less current cost. This is because of outstanding design that makes necessary only three moving parts, permanently oiled, precision built and completely sealed against moisture and dirt. No wonder the Meter-Miser is so miserly in its use of electric current!

On Guard!

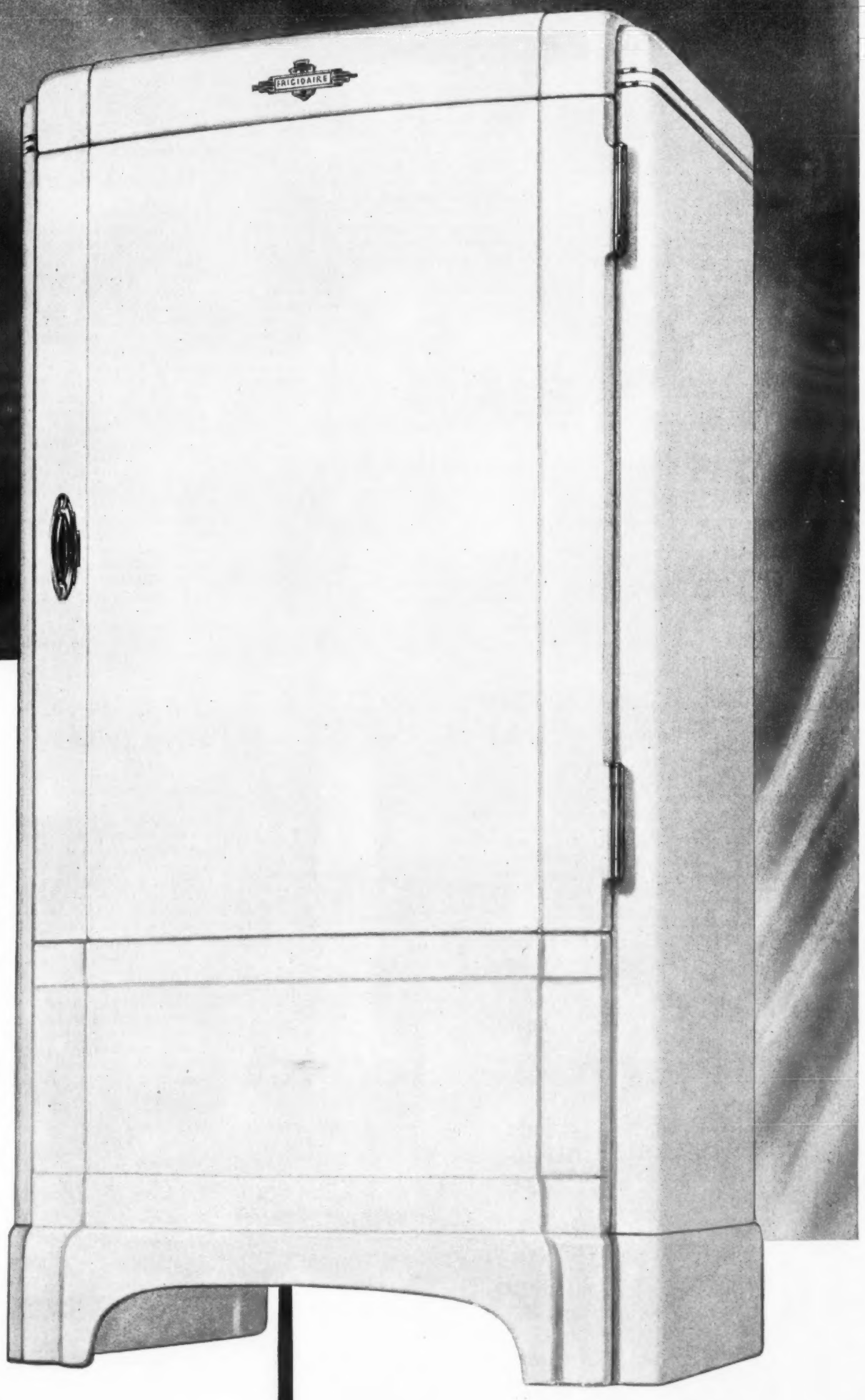
The New Food-Safety Indicator

The boldest stroke ever incorporated into the manufacture of a refrigerator. Frigidaire is now equipped with this new Food-Safety Indicator, an accurate instrument built right into *the center of the food compartment,* giving visible proof that the *cabinet* is kept at Safety-Zone Temperature, below 50 degrees and above 32 degrees.

★ ★ ★ FRIGIDAIRE

HIT!

"METER-MISER"



Five-Year *Protection* Plan

Frigidaire places such faith and confidence in the Meter-Miser that this sealed-in mechanical unit, a marvel of outstanding design and engineering, comes to your customers protected for Five Years against service expense.

FRIGIDAIRE
MADE ONLY BY GENERAL MOTORS

The New Name-Plate is a Salesman in Itself

Frigidaire is made *only* by the Frigidaire Division of General Motors Corporation. Your prospects are being educated to look for this name-plate before they buy.

The 1936 Frigidaire Line Includes

FOUR MASTER MODELS

from 4.1 to 7.24 cu. ft. capacity. All with Dulux Exterior, Stainless Porcelain in Seamless Interior and a long list of other superior advantages.

In addition there are the Koldchest, 2.1 cu. ft. capacity...and the D3-36, 3.1 cu. ft. capacity.

FIVE SUPER MODELS

from 4.1 to 9.1 cu. ft. capacity. All with Porcelain Exterior and Interior, Portable Utility Shelf, Hydrator and the Quickube Ice Tray, in addition to all other Frigidaire advantages.

FOUR EXTRA-SIZE AND DE LUXE MODELS

from 10 to 15.1 cu. ft. capacity.

TWO SPECIAL MODELS

5.1 and 6.24 cu. ft. capacity.

FRIGIDAIRE OFFERS THESE OUTSTANDING SELLING FEATURES

Meter-Miser · Food-Safety Indicator · Wider, Roomier Interior · Portable Utility Shelf · Full-Width Sliding Shelves · Automatic Interior Light · Frigidaire Hydrator · Super Freezer · Automatic Reset Defroster · Automatic Ice Tray Release · Quickube and Rubber Grid Ice Trays · "Double-Range" Cold Control · Sealed Steel Cabinet finished in Dulux or Porcelain · Touch-latch Door Opener · Exclusive "F-114" Refrigerant.

CORPORATION, *Dayton, Ohio*

Considering All Customers as Refrigerator Prospects Builds 200 Sales a Year Record for Hardware Dealer

PITTSBURG, Kan.—Without any canvassing salesmen, and operating in a town of 19,000 inhabitants where 10 other dealers handle electric refrigeration, Sell & Son's, retail hardware merchant, General Electric dealer here, sells an average of 15 refrigerators a month and has disposed of 200 boxes a year for the past three years.

Giving wide emphasis to electric refrigeration in its advertising, maintaining store and window displays, and considering all its hardware customers as potential refrigeration prospects is the thumb-nail formula which John Sell, head of the company, claims has helped build this sales record.

"Newspaper advertising," says Mr. Sell, "is our chief aid in getting store traffic. We devote prominent space in our advertising copy to electric refrigeration, and we offer each week a 'special' price on an article of our hardware or kitchenware line."

Sell & Son's use of display in selling electric refrigeration to Pittsburg residents is evidenced first in window display arrangements which feature a G-E unit in operation. Inside the store a large array of models are placed in a central location.

"We keep several models connected, lighted up, and filled with foods and trays of ice cubes, just as if they were installed in prospects' homes," Mr. Sell states.

Backing up these silent salesmen, Sell & Son's employees have developed the habit of asking each of their customers: "When are you going to buy your electric refrigerator?"

This practice, according to Dealer Sell, enables the salesman to determine right away whether or not the customer is a live prospect, and if he is, implants the idea of buying an electric refrigerator in his mind.

With this as opening wedge in the sales-getting tactics which salesmen of this company employ in turning hardware purchasers into refrigeration buyers, Dealer Sell explains the rest of the procedure in this way:

Whenever possible the salesman uses this question as a lead into telling his refrigeration sales story.

For seven consecutive days, starting with the morning after the customer is first contacted in the store, he receives a piece of promotional literature from Sell & Son's telling him why he should buy an electric refrigerator.

After the last piece of mail in this campaign is sent, the prospect's name is given to a store salesman who makes an appointment for a follow-up call in the evening, when he can tell the complete sales story to Mr. and Mrs. Prospect.

Sell & Son's pays its salesmen straight salaries, with small commissions added for electric refrigerator sales. This method, Mr. Sell believes, induces the employees to sell without using high-pressure methods that straight commission selling might involve.

By carrying electric refrigerators, this hardware store has not only increased its total sales volume, but, in one instance at least, the refrigerator sales saved the company from a "sad experience," claims Dealer Sell.

"Our range sales were reduced considerably during the fall of 1935 due to the unseasonably hot weather, so we increased efforts on our refrigerator sales. Six units were sold on Nov. 1, and by Nov. 9, we sold four more boxes. Total number of refrigerators sold from Sept. 1 to Nov. 23 was 36 units."

RFC Mortgage Co. Will Purchase Mortgages Insured Under FHA Construction Plan

WASHINGTON, D. C.—Stewart McDonald, Federal Housing administrator, recently reported that an agreement has been reached with the RFC Mortgage Co. by which the latter will furnish the facilities of a mortgage discount bank for the purpose of purchasing mortgages given for new construction and insured by FHA.

"The effect of this agreement is tantamount to the establishment of a national mortgage association or a mortgage discount bank for mortgages on new home construction," Mr. McDonald explained.

"Another effect of this agreement reached with Chairman Jesse Jones of the Reconstruction Finance Corp. will be to accelerate new residential construction, which had already acquired considerable momentum during the last five months of 1935. December showed the biggest rate of residential construction for that month since 1930.

Mr. McDonald estimates that 37 per cent of the urban one and two-family residences during the latter part of 1935 were constructed under the FHA plan.

The new system will make available approximately 10,000 lending institutions, constituting practically the entire banking resources of the nation, qualified for operation through Finance Corp. and the FHA.

The administration believes that since the average value of mortgages insured by the FHA is about $4,000, this new capital in the mortgage field will be a boon to those in the lower incomes brackets.

YOUR GUIDE TO SIMPLER, MORE PROFITABLE

Refrigeration Service

Service Men who are constantly facing a variety of refrigeration problems, find practical solution of those problems in EXTRA DRY ESOTOO (Liquid Sulphur Dioxide).

They appreciate its absolute dryness—secured by our exclusive patented process—its complete freedom from foreign substances in suspension.

Its companion-product, V-METH-L (Virginia Methyl Chloride) is also high in the favor of machine-builders and service men. It can be used with flange-jointed copper tubing, which costs much less than the welded steel construction required for ammonia.

And remember—these Virginia Refrigerants are easily and quickly available from 66 conveniently-located distribution-points in North America.

VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

Mail Coupon Now!

F. A. Eustis, Sec'y, Virginia Smelting Co., 131 State St., Boston, Mass.
Send me the literature I have checked. I am interested in receiving any additional literature on Electrical Refrigeration you may issue from time to time.
☐ Folder: Extra Dry ESOTOO (Liquid Sulphur Dioxide)
☐ Folder: V-METH-L (Virginia Methyl Chloride)
☐ Folder: Transferring from large to small cylinders
☐ Circular: Physical properties of various refrigerants
(Write name and address in margin)
E-26-36

New Westinghouse Setup Brings Many Personnel Changes

MANSFIELD—Creation of a new south central district has resulted in a number of personnel changes which have just been made public by Westinghouse Electric & Mfg. Co.

Harold W. Brown, formerly manager for the southeastern district, will be district merchandising manager for the new south central district, with offices in Birmingham. The new district includes, Louisiana, Alabama, Mississippi, northwestern Florida, and most of Tennessee.

S. M. Davison, formerly refrigeration manager of the company's middle Atlantic district, with headquarters at Philadelphia, will take over the southeastern district as merchandising manager, with headquarters at Atlanta.

J. J. Huey, who was Mansfield and Atlanta merchandise man, is the new refrigeration supervisor.

S. W. Sorenson, former Allentown supervisor, has been promoted to manager of refrigeration sales for the middle Atlantic district.

P. E. Rinehart, formerly in department store sales promotion, will be domestic refrigeration supervisor for the central district.

Dealer's G-E Model Home Draws 2,000

HAYS, Kan.—A General Electric "New American" home, the actual residence of George H. Butler, G-E dealer here, drew a crowd of 2,000 visitors during its eight-day open house. With no newspaper advertising, the display drew the crowd from Hays, with a population of 5,000, and surrounding towns, the register showing visitors from 100 miles away.

The Hays home is equipped with General Electric refrigerator, range, dishwasher and sink, gas furnace, air conditioning in every room, laundry appliances, and modern wall cabinets. It is the first house in this part of Kansas to be equipped with air conditioning.

Four bedrooms and a bath are on second floor, and a living room, hall, dining room, bedroom and kitchen on the first. The full concrete basement houses the laundry room, fruit room, storeroom, and recreation room.

Mr. Butler's enthusiasm for electrical appliances has helped him win a number of sales contests conducted by his distributor, Midwest Appliances, Inc., Kansas City, during the three years in which he has been handling the General Electric line.

G-E to Use 'Old-Timer Drive' to Get Prospects

SCHENECTADY, N. Y.—An "Old Timer Discovery Drive," March 2 to April 30, a search to discover, from descriptions offered by the public, the oldest electric washer, ironer, and hand iron, is the basis of a novel campaign which General Electric Co. will use this year.

Radio programs and dealer cooperative advertising are expected to make the campaign do four things: discover, with a minimum of resistance, the names of persons owning antique laundry or other electrical equipment; get consumers interested in modern equipment; increase store traffic; and build early spring sales and prospect lists.

G-E will make cash payments to consumers submitting descriptions of the 25 oldest appliances, and each dealer will be urged to offer merchandise awards for the three best descriptions submitted by customers.

Shapiro Co. Shows Leonard Line to 175 Dealers

NEWBURGH, N. Y.—Approximately 175 dealers from the Hudson Valley and surrounding territory met for a four day session of a refrigerator and electric appliance showing put on by the Shapiro Sporting Goods Co., at its showrooms at 90 Broadway here recently.

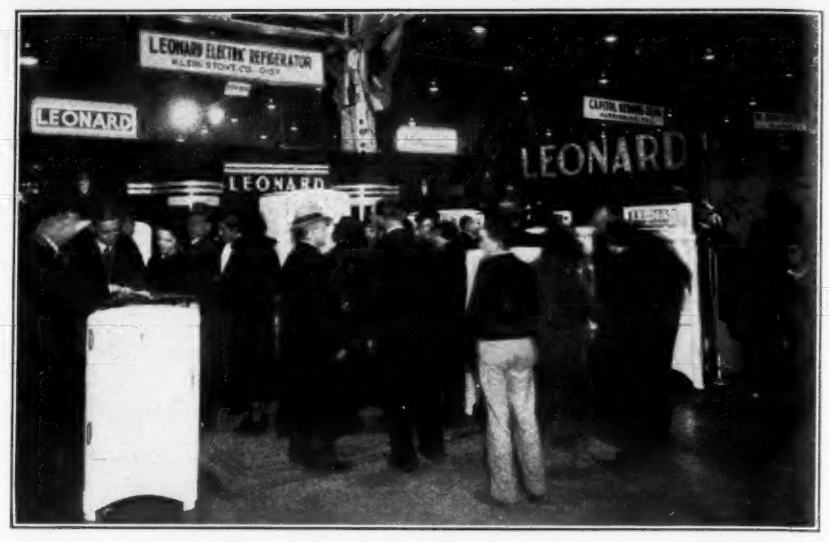
Three shows a day were used to introduce the 1936 Leonard refrigerator line, the Nineteen Hundred washer, and the Tinnerman gas range.

Samuel Rosenblum and Harold Gabrolive were in charge of the meeting, assisted by Mr. Miller of the Leonard Refrigerator Co., A. J. Tinnerman and Howard Witt, of the Tinnerman Stove & Range Co., and C. K. Bagg of the Nineteen Hundred Corp.

Domestic Utilities to Sell Automatic Line

CHICAGO—Appointment of Domestic Utilities, Inc., 1209 West Washington Blvd. here as Illinois distributor for Automatic washers and ironers, was announced recently by the Automatic Washer Co. of Newton, Iowa.

Farm Show Visitors See New Leonard



Gus Horner (at left) of the Lancaster Maytag Co., one of the Klein Stove Co.'s dealers, gets his first 1936 retail order from a visitor at the Pennsylvania Farm Show at Harrisburg.

Gimbel Credit Manager Urges Continuance of FHA Credit Plan; Praises Soundness of Program

NEW YORK CITY—The modernization credit plan worked out by the Federal Government under authority of the National Housing Act is one of the soundest programs ever offered the public, and should be continued, Joseph H. Zelch, credit manager, Gimbel Bros. department store here, told the Metropolitan Controllers' Association at its monthly meeting Feb. 19 at Midston House.

"Under its provisions, a flood of money which had been locked up in bank vaults was turned loose, employment and increased sales of durable materials followed," the speaker declared. "Health and living standards have been raised, and furthermore, losses in property values have been checked."

To support his contention that the modernization credit has added measurably to the stimulus of business, Mr. Zelch cited these cases:

(1) One department store chain, representing less than 20 stores, has, in a few days less than two months, sold $250,000 worth of goods, mainly refrigerators, washing and ironing machines. The unit value of sales has been between $75 and $100. It has resorted to repossession in less than six cases.

(2) Another chain representing about 30 stores, has in a little more than two months, done $370,000 of business along similar lines.

(3) A company engaged exclusively in the manufacture and sale of refrigerators reports that in two and a half months it has done $250,000 of business in New York City alone. It also reports defaults as "negligible."

Losses to the government under its insurance guarantees of modernization loans, have been less than one percent, according to Mr. Zelch.

"There is no doubt but that this is the lowest cost instalment plan financing ever devised and that it imposes no undue burdens on those borrowing under it. Also, in many cases, it has relieved the seller of the expense and worry of collection—such being taken over by the bank or financial subsidiary," said Mr. Zelch.

Detroit Dealer Plans To Organize Chain

DETROIT—Jack Morey, newly-appointed vice president and director of sales for the Lind Mercantile Corp., electrical appliance dealer here, will be in charge of the program of expansion to be undertaken by the company shortly, reports S. E. Lind, president.

Mr. Morey has had 15 years of wholesaling experience in Ohio and Michigan, having been connected with the United American Bosch Co., first as general sales manager, and then as distributor.

Mr. Morey's plans, which are already under way, will include the opening of an enlarged home appliance department in Sperry's Department Store in Port Huron, and of three additional Lind Appliance stores in Detroit, bringing the total to six.

The entire program, he says, is to form a nucleus for a chain of electrical appliance stores for Michigan.

Mass. Furniture Stores Form Cooperative Buying Corp.

SPRINGFIELD, Mass.—Twenty retail furniture stores have joined an Associated Buyers' Corporation with headquarters here, recently organized on a non-profit basis for syndicated buying, merchandising, advertising, and promotion.

Hadley Company Furniture Stores of New England at 1330 Main St., under the management of W. L. Robertson, will be headquarters.

Many More Dealers Attend Bruno-New York Meeting

NEW YORK CITY—Approximately three times as many dealers attended this year's showing by Bruno-New York, Inc., Fairbanks-Morse distributor, as were present a year ago.

MINNEAPOLIS-HONEYWELL uses SYLPHON BELLOWS in Refrigeration Pressure and Temperature Controls

Contributing toward the dependability, accuracy and long trouble-free service of Minneapolis-Honeywell controls, Sylphon Bellows have helped this manufacturer build an enviable reputation for customer satisfaction.

So it is with many of the leaders in the refrigeration industry who have the greatest investment in product acceptance and good will. They want nothing less than the time-tested superiority of this, the most highly developed metal diaphragm in the world—backed by 35 years of experience in its correct application and an intimate knowledge and appreciation of refrigeration thermostat requirements. Write for Bulletin DO-122. Sent on request.

FULTON SYLPHON CO.
KNOXVILLE, TENN., U.S.A.

Sales Idea of the Week

By V. E. (Sam) Vining

Has it occurred to you that no family ever paid for an electric refrigerator—if they have one big enough to meet their needs?

Has it occurred to you to tell your prospect that her refrigerator is a gift to her—

From the ice man;

From the grocer who runs specials;

And the butcher who sells his meat cheaper on market days.

Have you told your prospect that if she puts the amount she saves each week in a coffee can—the actual money saved at the end of the month will, in most cases, more than pay the instalment on any size refrigerator she may need or want.

Are you hammering home the idea that an electric refrigerator is the only appliance that actually—

Adds to the family income.

That families with an electric refrigerator actually are able to put more money in the savings bank,

Because they have the refrigerator.

Every other expenditure made by that family is a deduction from the family income for the sake of convenience, labor saving, pleasure, or necessity. These things are all worth the money, but they reduce the family income—must be deducted from the savings left over at the end of the month.

A refrigerator makes it possible to "eat your cake and have it too."

Racine Bureau Eliminates Unprofitable & Unethical Practices Through Cooperation of Dealers

RACINE, Wis.—An outstanding example of what an effective dealers' association can do to assure the development of retail refrigerator merchandising on a sound basis, both within and without, is the Racine Refrigeration Bureau, organized here five years ago for the "elimination of unprofitable and unethical practices" among its members.

Covered in the agreement are discounts, premiums, trade-in allowances, sales practices, sale of obsolete or "last year's" models by bureau members, and interest rates on time payment contracts.

The bureau at present has nine members, all of whom are mechanical refrigerator dealers in the Racine territory. Victor M. White is president, and August Ernst secretary of the association.

Elimination of Discounts

Among the bureau's aims, as outlined in the articles of association, is the elimination of discounts on regular sales, except on quantity purchases. Here, uniform discounts are set: 5 per cent for two units (one order, one location, one delivery); 5 per cent and 3 per cent on three to five units, inclusive; and 10 per cent on six to 10 units. Employees of bureau members are allowed 10 per cent.

Each member dealer is given a list of the retail prices for refrigerators handled by all bureau members, for reference purposes.

Also covered in the agreement is the giving of premiums with purchases. No member may give a premium, unless the same practice is available to all other members as well.

Trade-In Allowances

Trade-ins are carefully regulated in the agreement, a set of standard allowances having been determined, by which all members are bound. Allowances are dependent upon the size and quality of the old refrigerator, and are not left to the judgment of the individual dealer.

A second feature of the trade-in agreement has to do with disposal of the unit following the sale. The dealer handling the make of refrigerator traded is given first opportunity to purchase it from the dealer making the sale, at the price allowance made the customer. This eliminates possibility of the traded-in unit being used for purposes of comparison.

Trial Offers Forbidden

Trial offers on refrigerators are forbidden. Neither can any member of the bureau give the prospective buyer to understand that the sales plan he uses permits the return of the refrigerator after a certain time, without obligation to buy.

Down payments are set at 10 per cent of the delivered price of the unit, with the stipulation that in no case shall they be less than $10.

In approaching prospective customers, salesmen employed by bureau members are not allowed to make any derogatory comment regarding the make of refrigerator handled by other bureau members who may be after the same sale. Allusions to competitors' financial or service facilities are also taboo.

In fact, should the salesman find he has lost a good prospect to a rival dealer, the agreement insists that he congratulate the new refrigerator owner on having bought an electric refrigerator—even though it wasn't the one he is selling.

When a change in models leaves a dealer with a considerable stock on hand, the agreement provides that he list such models with the bureau, together with his plans for merchandising them—at special discounts, if he thinks necessary.

Time Payment Sales

However, such models may not be advertised in the newspapers; instead, the dealer is limited to displaying the models in his showroom or window, and advertising their prices through ordinary display cards in his store. And the dealer has to inform the bureau, in advance, as to what he intends doing.

Time payment sales are handled through the utility, Wisconsin Gas & Electric Co. Interest rates, as established by the bureau, are: 6 per cent for 12 months; 7 per cent for 15 months; 8 per cent for 18 months; 9 per cent for 21 months; and 10 per cent for 24 months or above. In any case, the payments may not be scattered over more than 36 months.

Text of Dealer Agreement

The dealer agreement, in its entirety, is as follows:

For the purpose of establishing confidence among ourselves and with the public in our business, as well as eliminating unprofitable and unethical practices, we agree to the following:

(1) Discounts, premiums, and allowances:

(a) To discontinue all discounts other than quantity purchase as stipulated below; excepting sales to employees of respective bureau members, upon which a 10 per cent discount has been agreed. Cash sales, net—no discount.

Quantity purchase (one order, one location, one delivery).

Two units, 5 per cent.

Three to five units inclusive, 5 per cent and 3 per cent.

Six to 10 units inclusive, 10 per cent.

Builders' discount retroactive on quantity purchase within 12 months of initial order.

(b) A fixed trade-in allowance on electric or ice boxes based on quantity and size.

(c) That no premium will be offered to prospects by any member without first making said premium available to all members.

(2) That any mechanical refrigerator taken in on trade will first be offered to dealer now selling make that is traded in at allowance made. In no case will such equipment be used for comparison purposes.

(3) That no mechanical refrigerator will be placed on trial or have any plan that will lead a customer to believe that he is under no obligation to keep the refrigerator after a specified time, and thereby lead the customer to understand the plan to be a trial offer.

(4) That the minimum down payment shall not be less than 10 per cent of the delivered price, and in no case be less than $10 on a time payment contract.

(5) That any salesman contacting prospect, finds that competitive make has been purchased will refrain from making any destructive statement about the product of the competitor; but will compliment the purchaser on making a selection of an electric refrigerator even though he lost the sale.

(6) That no unfavorable statement will be made to a prospect about the financial strength or service ability of another bureau member.

(7) That each firm represented in this bureau will be entitled to one vote and any five members or representatives will constitute a quorum.

(8) The admission of any new member will be by 100 per cent vote of those present, and any objection to a new member or a present member will be made at a regular bureau meeting.

(9) That any member or representative absent for two consecutive meetings will be automatically dropped from the bureau.

(10) That all dealers will furnish the secretary with a complete Racine delivered price list and this price list will be available to every bureau member. Also that as manufacturers see fit to change their models, the bureau members who shall have obsolete models for sale at reduced prices will furnish a list of these models and sales prices to other members of the Bureau. It is understood that obsolete models at reduced prices shall not be advertised in the newspapers, but it was agreed that these obsolete models may be displayed and advertised through the use of window display cards as may benefit each respective dealer.

(11) That any violation of this agreement may be investigated by a committee composed of three members of the bureau, one selected by the complaining member, one by the member against whom the complaint is made, and another selected by these two.

(12) That any member violating the above agreement may be dismissed from the bureau and lose all benefits on a majority vote, provided that the member is first given an opportunity to offer an explanation.

Iwashita Is Appointed Asst. Engineer on S-W Refrigerators

CHICAGO — George K. Iwashita, formerly associated with the Trupar Mfg. Co., in Dayton, has been appointed assistant chief engineer of the refrigeration division of Stewart-Warner Corp.

Mr. Iwashita, who is a native of Hawaii, is a graduate engineer. In addition to his engineering training, he has taken law and business administration courses at University of Dayton night school classes. He received the degree of Doctor of Jurisprudence at this university last year.

He is a member of the A. I. E. E. and the A. S. R. E., and a first lieutenant in the Organized Reserve Corps of the U.S. Army.

Currie to Manage G-E Works at Fort Wayne

FORT WAYNE, Ind.—Neil Currie, Jr., for the past six years manager of General Electric's Philadelphia works, has been appointed manager of its Fort Wayne works.

Mr. Currie succeeds Walter S. Goll, who, although retiring as manager after 38 years of service, will continue with the company and be available for special assignments. R. V. Good, previously assistant manager at Philadelphia, was appointed manager to succeed Mr. Currie.

G-E Coach Helps Sell 32 Units in 10 Days

MILFORD, Conn.—Supplying the residents of this town with a display of electrical appliances carried to their doors by means of a sales coach is the promotion which helped Douglas F. Kahle, General Electric dealer here, sell 32 electric refrigerators in 10 days, during a special sales campaign sponsored recently by the United Illuminating Co.

When Kahle purchased the coach last April, he mapped the town into eight divisions, each of which the coach covers regularly. This method of covering his entire territory has enabled Dealer Kahle to sell more than 100 refrigerators, four electric ranges, and two dishwashers during the past year.

Jackins Buys Appliances For Baltimore Dept. Store

BALTIMORE—Charles R. Jackins has been appointed manager and buyer of refrigerators and appliances for Brager-Eisenberg, Inc., department store here.

Mr. Jackins comes to Brager-Eisenberg, Inc., from The May Co., department store, where he was in charge of washer sales. He was previously employed as manager and buyer for refrigerators and appliances at Besche Bros., furniture and appliance store of this city.

Bright Co. to Distribute Grunow in Reading

READING, Pa.—General Household Utilities Co. has appointed Bright & Co. here as distributor for Grunow radios and refrigerators in eastern Pennsylvania.

The company was organized in 1860 by the grandfathers of the present owners to conduct a wholesale hardware business. In recent years they have added a home appliance department.

Officers of the company include: Stanley Bright, president; G. Howard Bright, secretary-treasurer; Charles Runkle, sales manager; C. Leinbach, sales purchasing agent; and Robert Anewalt, sales promotion manager.

"AN OLD NAME IN A YOUNG INDUSTRY"

CURTIS

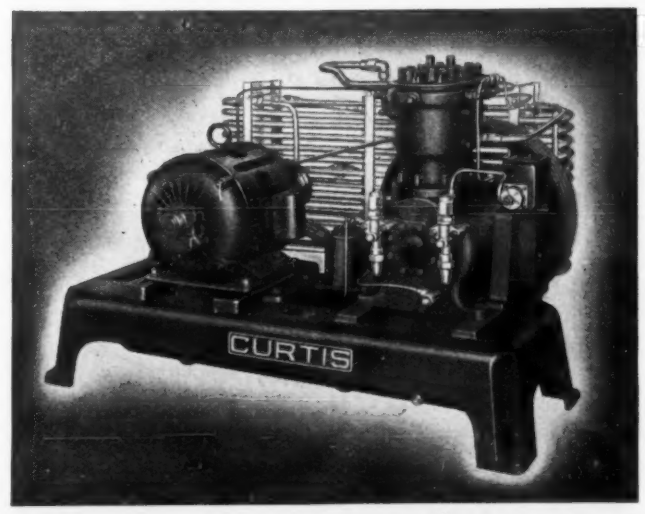
Specify CURTIS and be sure

ELECTRIC REFRIGERATION AND AIR-CONDITIONING UNITS

The sure way to satisfaction from a refrigeration or air-conditioning installation is to be certain that its most vital part—the condensing unit—is built by Curtis. Their constant, trouble-free performance is the result of 42 years' specialized experience in building fine compressors.

Complete Line—65 Units · Extra Capacity · Slow Operating Speed · Experienced Design · Low Upkeep · Rugged Construction · Fine Materials and Workmanship

Curtis enjoys the highest capital and credit rating—a Curtis product won't become an "orphan".



CURTIS Curtis Refrigerating Machine Company
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue — St. Louis, Mo.

In Canada:
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ont., Can.

The HEIGHT of PERFECTION

The ANSUL Twins

ANSUL CHEMICAL COMPANY
MARINETTE » » » » » WISCONSIN

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A Way to Promote Air Conditioning

EVERYBODY is expecting big things of air conditioning. It has all the makings of a major industry. The opportunity to develop air-conditioning business on a large scale seems to lie immediately ahead of us or, perhaps, "just around the corner."

Real progress has been made in a number of directions during the past few years but it should be entirely obvious to anyone who has been studying the situation that air conditioning *needs something* to accelerate its progress.

Right now, the air-conditioning industry needs *leadership.* But even if any considerable number of our readers will agree to that proposition, there would probably be innumerable varieties of opinion as to what is meant by leadership, what sort of leadership is desirable, or what individuals, companies, groups, or associations are capable of furnishing such leadership.

A Lesson from the History Of Electric Refrigeration

For the purpose of encouraging constructive discussion of the subject, we believe it may be helpful to recall a bit of history in connection with the development of electric refrigeration. It is probably a safe guess that a very large percentage of the people now engaged in the electric refrigeration business have never heard of an event which took place almost exactly 10 years ago, which had a profound influence in shaping the destinies of the then-budding electric refrigeration industry.

Those of you who remember the situation at that time will probably agree that the future outlook for electric refrigeration was just as vague, and its program for market development was just as indefinite, as is the present outlook and program for air conditioning. Everybody was enthusiastic about the future possibilities of electric refrigeration at that time, just as they are about air conditioning today, and there were also just about as many different ideas as to what should be done about it.

Six Companies Confer on A Cooperative Program

The particular event to which we have reference was a meeting of refrigeration manufacturing executives held at the Westchester-Biltmore Hotel, Rye, N. Y., Jan. 28-30, 1926. Six different manufacturers were represented by their presidents, sales managers, advertising managers, chief engineers, and other department heads.

It was the third meeting of its kind. Two previous gatherings had been held mainly for the purpose of getting acquainted and promoting personal friendships. At this third meeting, however, the group got down to business.

We will not attempt, at this time, to report all the significant features of that meeting, although a number of important things happened. The foregoing outline of "the picture" will be sufficient to emphasize one specific step taken on that memorable occasion.

Refrigeration Executives Decide to 'Sell the Idea'

At an executive session, it was formally agreed that each of the companies represented at the meeting would subscribe equally to a fund of $100,000 to be expended for a broad market-development program for the benefit of the *industry as a whole* and designed specifically to "sell the idea" of electric refrigeration to the public. An advertising committee, consisting of the advertising managers and their advertising agency representatives, was given the specific job of *working out the details* of the program.

Now it might easily have been decided that the little job of "working out the details" should be turned over to some available individual. The resulting program might have been a masterpiece of that individual's creative ability. That would have been an "efficient" method of handling the job.

Fortunately no *one* individual had the satisfaction of spending that $100,000 according to his own ideas, although a number of enthusiastic participants (including the writer) made strenuous efforts to guide that program.

Advertising Managers Agree on Fundamentals

Never within the experience of this writer, did a committee take its job so seriously. Two-day meetings were held in Schenectady, Niagara Falls, Detroit, New York City, Waldenwoods, Mich., and elsewhere. There were morning, afternoon, and evening sessions. Every conceivable variety of advertising copy and illustration was proposed, discussed, and evaluated. The positive and negative values of all manner of sales appeal were classified and rated.

Gradually a copy-theme was evolved. Agreements were reached on fundamentals, casual and half-baked ideas were thrown into the discard, the common objective of the industry became clarified, and a definite cooperative program was launched.

It should be noted that the advertising executives who gave so much of their time and effort to this cooperative activity were not so stimulated simply because of the amount of money involved. Most of them were accustomed to handling large advertising appropriations. Most of them were directing the expenditure of much larger sums for the advertising of their individual companies. It was no group of amateurs seeking to "learn something about advertising." Practically any one of them could have handled the entire program single-handed if called upon to do so. In fact, any one of them could probably have turned out a *better series of advertisements* with relatively little effort.

100-Per Cent Constructive Standards Adopted

The truth is that the series of advertisements which appeared in the *Saturday Evening Post* during the summer of 1926 was rather colorless. The copy was so devoid of negatives and so altogether "pure" that it was somewhat lacking in appeal. But the campaign did set up a *standard* of 100-per cent *constructive* sales appeals for the industry.

Something was accomplished at those meetings which could not have been achieved in any other way. The real result was a mutual understanding and agreement regarding *the best methods of selling electric refrigerators to the American public.* The agreements reached at those meetings determined a cooperative program but, far more important, those agreements profoundly affected the character of all later advertising by the individual companies.

Copy Writers Instructed to Lay Off the Ice Man

To be specific, it was during those committee meetings that it was definitely decided to "lay off the ice industry." The previous tendency was to advertise electric refrigeration in terms of its advantages over the ice man, with the inevitable references to the ice man's dirty feet, puddles of water on the kitchen floor, etc.

Likewise, the committee agreed that nothing would be accomplished by endless arguments over the competitive merits of mechanical design. Previously, much time had been wasted by rival inventors in attempting to prove the superiority of their mechanisms. The advertising men came to the unanimous opinion that such tactics would only be confusing to the housewife.

Pride of Ownership— The No. 1 Sales Appeal

Probably the most surprising collective agreement resulting from the heated debates was that concerning the *No. 1 sales appeal.* However commonplace the idea may be now, it was distinctly new 10 years ago. Certainly it was not the one sales appeal which everyone would naturally take for granted. Assuredly it had *not* been the chief sales appeal emphasized in previous advertising. Therefore, it does not appear reasonable to suppose that the individual advertising managers would have arrived at that viewpoint if they had not had the opportunity to debate the subject among themselves.

In case you do not know it, the No. 1 sales appeal was not health, or convenience, or economy. It was *"pride of ownership."* Expressed another way, it was agreed that the chief object for electric refrigeration advertising was to *make people want it.* That clear conception of the objective accounts for the vogue of beautiful pictures which characterized electric refrigeration advertising during the early years.

Popularizing the Electric Refrigerator

In hundreds of advertisements in the leading magazines, expensive color plates were used in full-page and double-page spreads to show the electric refrigerator as the object of admiring eyes. Housewives beamed upon it, guests invaded the kitchen to envy it, robust husbands looked longingly at the array of appetizing foods displayed on the shelves, ruddy-faced children clamored about it, handsomely dressed young men and women gathered around it. Admiring the new electric refrigerator became the great indoor pastime of the American public.

You all know the results. Millions of electric refrigerators have been sold. It is true that inventors have been accorded small recognition. Purveyors of parts and materials are known only within the trade. The great American public has not known or cared who made the machine, how it is put together, or what is inside the thing.

The 'Constitution' of the Refrigeration Industry

Earnest advocates of this, that, and the other have argued at times that the public was being deceived by the failure of the manufacturers to reveal all the inner workings of their masterpieces. Here and there, newcomers in the field, who had not participated in writing the "constitution" of the industry, have launched advertising programs at variance with the original conception. Some of them have been quite surprised at the resentment aroused by their unorthodox methods.

It is easy to understand the attitude of the older manufacturers. Due to the foresight of that pioneering advertising committee, they had the good fortune to adopt a program with a sound sales-appeal in the early stages of the industry. It worked out successfully, we might even say magnificently. Naturally they believed in it and wanted to protect it. They objected to any procedure which would tend to tear down the fine structure of public confidence which has been built up through concerted effort of the industry as a whole.

Outstanding Record of Success Due to Leadership

To the casual observer, it may appear that the success of the electric refrigeration industry is something which just happened. Shallow minds may assume that the industry merely rode a popular wave of public fancy. The success of the electric refrigeration industry has *not* been due to luck. It had *leadership* of an unusually high order. It got started in the right direction and it kept on going.

The air-conditioning industry of today needs that same sort of leadership. At present all sorts of forces are pulling in opposite directions. There is no common understanding, objective, or program.

There is too much jockeying for position. Sales effort is scattered and conflicting. What one salesman says is disputed by another.

The Air Conditioning Buying Movement Waits

The net effect is neutralizing. The public is confused, hesitant, and unconvinced. The great buying movement will wait until the industry makes up its collective mind as to what it wants to do and how it proposes to do it.

Some way should be found to bring all of the discordant elements of the industry together where they can argue it out behind closed doors to some kind of a conclusion. After a week or so of fruitless effort to convince each other, they would finally realize the reason for their ineffective appeals to the public.

If the chief executives of the air-conditioning manufacturers got together and instructed their advertising and sales managers to go into session for the purpose of working out a program *which would be beneficial to each and every company,* it would be well worth $100,000 or any other amount which the group might set up as a cooperative fund.

The greatest benefit would be attained when there is a meeting of minds as to *what constitutes an effective advertising program for air conditioning* and what sales approach will best inspire *public confidence.*

When all elements of the industry begin to tell substantially the same story, the public will sense that air conditioning *has arrived* and that it will be safe to sign on the dotted line.

Letters

Misuse of the Term 'Air Conditioning'

435 West Center St.
Pomona, Calif.

Editor:

As a subscriber and *reader* of REFRIGERATION NEWS, I wish to say that I think it the best ever published and I read every bit of it as soon as I receive it. And I especially want to comment on Mr. G. W. Mason's article on page 6 of the January 1 issue as to the need of educating the public of what true air conditioning really consists of.

I am not an air conditioning engineer as yet but expect to be and I have had considerable experience in refrigeration. At present am a student of one of the large schools of refrigeration and air conditioning so I do know what to expect of an air conditioning job.

And some of the installations are badly misrepresented. I know from personal observance.

I have noticed in our local papers that Mr. So-and-So has a new house just completed which is air conditioned and in more than one instance I have visited and inspected the house only to find that it merely had a gas heater connected with each room through duct work with a circulating fan, with no means whatever for humidifying in winter or cooling in summer or dehumidifying. And in one instance there were only electric heaters built in the walls with a small propeller fan in back of the heating element for circulating the air, with no means of humidifying or dehumidifying or even cooling except for the cooling effect of circulation by the small fans.

So I think if there was some way of educating the public in what air conditioning really consists of and as to its value for health and comfort, it would smooth out most of the rough spots in the business. Also if everyone who is contemplating having his home or place of business air conditioned would subscribe to the NEWS and read it for awhile, three or four months, then he would know what to expect of his job.

E. L. Evans.

Instalment Sales Experience

Roanoke Gas Light Co.
Roanoke, Va.

Editor:

I have read with a great deal of interest the talk by R. L. Allison of the Quackenbush Co., Paterson, N. J., before the Instalment Selling session of the N.R.D.G.A. meeting in January, as reported in the Jan. 29 issue of ELECTRIC REFRIGERATION NEWS.

This is one of the best articles I have ever seen in connection with the treatment of the subject, and in handling a large volume of instalment sales I find that our experience is very much in line with that of Mr. Allison's, and I agree with every thought that he has expressed, based on our own experience.

C. B. MELTON, Treasurer.

Welcome Sign Out In Prague

Libus u Prahy cp. 59
Czechoslovakia

Publisher:

I have sent by Canner Publishing Co. $5 my subscription for NEWS and I am sending $7 for MASTER SERVICE MANUAL and REFRIGERATION ENGINEERS MANUAL. I hope that you will publish date when Mr. George Taubeneck will be in Praha (Prague) so I can welcome him. I am sure he will like Praha.

WM. JANAK.

The Norge Co. of Missouri
4000 Laclede Ave., St. Louis, Mo.

Editor:

Please send me one subscription for one year for ELECTRIC REFRIGERATION NEWS starting if possible with the first issue in February.

I have tried very hard to get by with reading the other fellows' issues but they raise so much h—— I guess I'll have to kick in.

A. I. MORRISON,
Branch Manager.

Refrigeration Service Shop
336 Lakeview Ave., P.O. Box 566
Orlando, Fla.

Editor:

I have awakened to the fact that I have missed several copies of the NEWS. My subscription had run out.

Please find check for $5 for the next two years.

Yours for more commercial electric refrigeration.

C. C. PERRY.

309 Nutt Rd.
Phoenixville, Pa.

Editor:

Having started a service department of my own, I am interested in receiving the NEWS regularly. I sort of feel lost not being able to see what is going on in the field of refrigeration.

J. RENNARD DEERY.

Around the World

With George F. Taubeneck

J. Clark Chamberlain

Couple of years ago when letters began to drift in to the NEWS from the Bureau of Electrical Appliances of San Diego, we became curious to know more about the bureau's secretary.

It was J. CLARK CHAMBERLAIN.

He wasn't in San Diego when we arrived Friday morning, but Friday night when he did get in from Los Angeles he located us quickly, gave us a promise of the keys to the city, and went into action.

Saturday noon he met us at the hotel, and escorted us to a luncheon table whereat were assembled the representatives of *every* refrigerator sales organization in San Diego—Frigidaire, General Electric, Kelvinator, Leonard, Norge, Westinghouse, Crosley, Grunow, Electrolux, Sears & Roebuck, Montgomery & Ward, and O'Keefe & Merritt. Some 30 men were there.

Saturday afternoon is not a working day in San Diego. It's a time for golf, for digging in gardens, and things. But there they were, on a short notice. Which, we should say, was a tribute to Mr. Chamberlain.

* * *

U. S. Grant and the Spirit of Thanksgiving

The luncheon was held in the U. S. Grant hotel — and, appropriately enough, one of the dealers present was U. S. GRANT, a quadruple-threat merchandiser selling Crosley, Kelvinator, Westinghouse, and Gilfillan refrigerators.

Mr. Grant reads ELECTRIC REFRIGERATION NEWS—although, he admits, "not as much as I should." With any kind of luck, he figures he'll be able to sell between 1,000 and 1,500 units this year.

He employs a dozen salesmen, paying them on commission basis only. His salesman "turnover," he estimates, is somewhere in the neighborhood of 50 per cent a year. During his selling season (and if he meets his self-set sales quota, that ought to mean practically all year) all salesmen are required to attend a daily morning sales meeting, at which previous day's experiences are discussed and current suggestions and methods outlined.

His most successful promotion stunt last year, Mr. Grant thinks, was a program of personalized advertising, which he carried on throughout the selling season. From stories which came to us, though, Mr. Grant by no means put all of his merchandising eggs in this one basket.

One particularly noteworthy scheme, of recent occurrence, was his "Turkey Month" last November. During this month, Mr. Grant offered a big, live turkey to every purchaser of an electric refrigerator. On Thanksgiving, a good many San Diego homes were thankful for two more things than usual—their new refrigerator, and the turkey they had for dinner—both furnished by U. S. Grant.

Mr. Grant uses the FHA a great deal in his selling work. "Fine!" he said, when asked what he thought of it. His FHA-sold refrigerators stayed sold too. Only 3 per cent of his 1935 time-payment sales had to be repossessed. And time sales were a big part of his business, too, for he said that only about 4 per cent of his sales were for cash.

He did think, though, that industry conditions in and around San Diego might be improved if franchises were restricted to the "fewer and better" type of retailers.

Present refrigerators, Mr. Grant thinks, could be made to operate more quietly and with less vibration; at present, that's his only criticism.

* * *

Cold Cookery Schools Helped Meyberg Co.

At least 1,000 units in metropolitan San Diego is the 1936 mark of Leo J. Meyberg Co., Norge distributor, as set forth by H. E. BRUNELLE. Selling at wholesale only, the distributorship assists all its dealers in sales training work.

Best promotion work, last year, was a campaign of local newspaper advertising, tied in with Norge's national advertising campaign, and a series of schools on cold cookery, held throughout the territory.

Mr. Brunelle has as his desired dealer set-up "the happy medium between too few dealers, and the wide-open policy of a multiplicity of dealers."

Improve his line? You can't, he says. "What could be left to be desired, beyond a new Norge?" is his way of putting it.

A NEWS reader? Naturally.

Hollingsworth Thinks Fewer Dealers Would Help Out

J. L. HOLLINGSWORTH of Watson & Wilson, Inc., Grunow distributor, credited the NEWS with giving "the best coverage of the industry." He has set his sales cap for 1,000 sales in 1936.

He thinks the new Grunows are "perfect!", and would be pleased if something were done about cutting down the number of dealers, giving the good ones a chance to do a better all-around selling job.

* * *

FHA Credit Boomed Electrolux Sales

W. H. HERMES, Electrolux gas refrigerator distributor in San Diego, has set himself a mark of 500 sales to shoot at this year. He has six retail salesmen, paying them a commission of 10 per cent on sales, with a bonus on monthly or annual volume. He gets his salesmen principally through newspaper advertisements, although a good number of them are men who come in in search of that kind of employment. Turnover is rather high—about 50 per cent.

Sales manuals and meetings have been two leading means of training his salesmen; but newcomers also receive individual instruction in selling methods.

The FHA was a big help to Electrolux sales, Mr. Hermes said, for approximately 75 per cent of his 1935 business was done under a finance plan, either FHA or C.I.T. Cash sales accounted for the other 25 per cent.

He joined in suggesting that dealers be limited to the "fewer and better" kind. "There are too many small dealers who are unethical," was his observation on this question.

* * *

Mansfield Engineers Should Like This

CLEM W. PORTER of La Matte & Callaway, Inc., Westinghouse outlet, a NEWS reader of long standing, reported he expects to merchandise 300 units this year. His business is strictly wholesale.

"There can be too many dealers in the field for the good of all," he thinks, "and it might be a good move to start a paring-down operation in this respect."

Westinghouse, Mr. Porter thinks, has just about everything it needs to keep its place in the front rank in sales. "They've put the unit in the bottom this year," Mr. Porter said. "That's the only change I thought they needed."

* * *

'Dealer Vs. Dealer' Sales Drive Brought Results

Both SAM L. HALL, president, and GENE M. CRAMER of Electric Supplies Distributing Co., Westinghouse distributor, were warm in their praises of the NEWS as an accurate, reliable source of pertinent information on developments in the refrigeration industry.

"It keeps me informed as to up-to-date developments," Mr. Hall said, and Mr. Cramer added, "it furnishes me with information that I am unable to secure from our manufacturer." He thought the comments by leading manufacturers were of vital interest.

The two men were at variance, however, in the sales total they expected to reach this year. Mr. Hall set the figure at 720, but Mr. Cramer indicated he wouldn't be satisfied with anything under 1,000 units.

Both agreed that the Westinghouse "Call to the Colors" campaign last spring was their best bit of promotion for the year. "We liked this campaign," said Mr. Cramer, "because it was put in effect during the selling season, and because it was very effective among our dealers."

Mr. Hall liked the "dealer against dealer" and "district against district" angle of the campaign, and said it was a big aid to sales.

Their dealers, the men said, thought highly of FHA, and hoped it would be continued. "It was slow in getting started out here," Mr. Hall added.

Very few cases of refrigerant trouble were reported by these two men, and Mr. Cramer said refrigerants today were not nearly the problem they were a couple of years ago.

Both men thought the dealer situation could do with a little tightening up, although Mr. Cramer was quick to add that he believed in good dealer coverage in every trading center. "Our experience has proven that 'better' sales are greater when we have complete coverage," he said. Mr. Hall is all for giving dealers exclusive rights, except in downtown areas.

"Lines should be restricted to aggressive dealers with proper display areas and adequate sales forces," in his opinion.

Both men thought that their company's new refrigerator line placed them in a favorable position, irrespective of competition.

"Our 1936 models are everything to be desired," Mr. Cramer said. "We believe we are far ahead of our competition—and we'll prove it by our sales this year."

"The 1936 Westinghouse line fulfills all present requirements," Mr. Hall added, "with the possible exception of a thermometer on the freezing unit."

* * *

'Use the User' Says Dutton

Another NEWS reader at the luncheon was GLENN H. DUTTON, proprietor of Dutton's Radio Store, Westinghouse dealer. With two retail salesmen, paid a straight salary only, he expects to sell at least 75 refrigerators this year.

Both of Mr. Dutton's men are old-timers, the "newest" man having been in his employ a mere four years. The men are distributor-trained, and are kept up to date on all new sales developments in this manner.

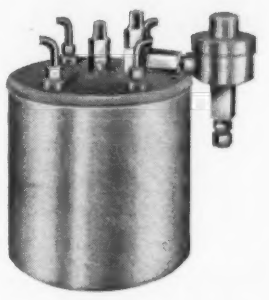
Hard work, says Mr. Dutton, was his best promotion drive last year. Calling on old customers, he adds, has been a prolific source of sales leads, as well as actual sales.

The FHA, thinks Mr. Dutton, has worked out very well; he makes considerable use of it. Repossessions, with him, are no factor—he had only one last year. About 10 per cent of his sales were for cash.

Mr. Dutton's pet peeve is "too much chiseling" among his fellow dealers—he feels that the situation might be

(*Continued on Page 12, Column 1*)

CLASS A PROSPECTS . . .
DISPENSERS YOU SOLD IN 1935



★ With the rapid increase in employment, 1936 is bound to show comparable increase in beer consumption.

Dispensers to whom you sold equipment in 1935 are soundly established—in position to profit from this increased consumption.

They will need additional equipment of every kind—particularly additional Beer Coolers. These outlets are your best prospects for Temprite Units—now.

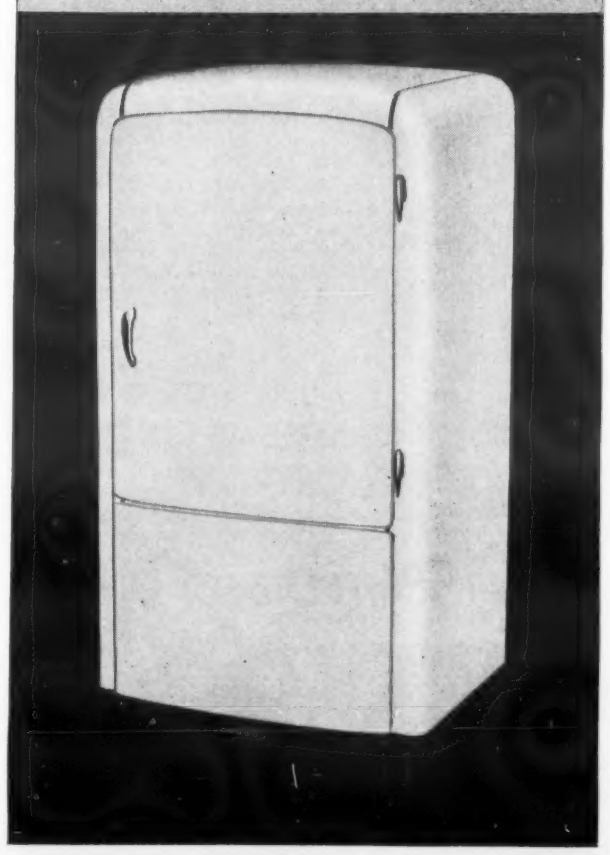
They know your equipment—and know you. You can easily show them why a Temprite delivers beer at exactly right temperature regardless of weather—why it is the most economical unit—and prove Temprite's value in attracting greater patronage.

Put your 1935 customers on the Class A prospect list—and go after them now for a real sales increase.

TEMPRITE PRODUCTS CORPORATION
1349 EAST MILWAUKEE AVE. - DETROIT, MICHIGAN
ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

"The Greatest Norge of All Time" IS PROTECTED by Bonderizing

IMPROVED



IN ADDITION to being 'proved' in every possible laboratory test and 'approved' by half a million of enthusiastic users, every year brings 'improved' features to the Norge refrigerator.

The 1936 Norge Rollator Refrigerator in design, efficiency, convenience features, flexibility of interior arrangement, economy of operation, is 'the greatest Norge of all time'.

Among the features of the 1936 Norge is the protection of Bonderizing. Bonderizing gives the cabinet an added finish permanence. It holds the finish and is substantial protection against rust. Calling customers' attention to this quality feature is a distinct sales aid.

PARKER RUST-PROOF COMPANY
2197 E. Milwaukee Ave. • Detroit, Michigan

A new book showing what a salesman should know about Bonderizing, will be furnished upon request.

PARKER RUST-PROOFING processes
BONDERIZING • PARKERIZING

Around the World

With George F. Taubeneck

(*Continued from Page 11, Column 3*)

improved if fewer dealerships were established.

But he's 100 per cent sold on his line, Westinghouse. He can think of nothing important that Westinghouse has left undone which might help his sales—and this covers everything.

* * *

How Benbough Eliminates Salesman Turnover

Two representatives of the domestic sales department of H. L. Benbough Co., Ltd., Frigidaire distributor, were almost as enthusiastic about the NEWS as they were about the product they sell.

PAUL A. DU PONT, sales supervisor, said he read the NEWS "on arrival," and W. E. WENDEL, manager of the distributorship, credited it with being a constant source of "many interesting subjects."

How many units do they expect to sell this year? Expect, nothing! These men know. "We'll retail at least 1,200 units," they chorused.

The distributorship has a half-dozen full-time men, an equal number of part-time men, and a thirteenth salesman, part-time, who devotes all of his working hours to commercial sales. Besides Frigidaires, the distributor also merchandises through these salesmen radios, washers, ironers, and vacuum cleaners. Salesmen are paid a straight commission of 10 per cent—no salary or drawing account.

Salesman turnover is practically nil with these men, resulting, perhaps, from the fact that most of them are obtained through personal contacts rather than through broadcast advertising. In other words, prospective salesmen are looked over, and their staying qualities studied, before they are ever approached with Benbough's sales proposition.

The men are well trained, too—with Frigidaire's standard recommended training course, supplemented by additional information which Mr. Wendel and Mr. Du Pont give them concerning methods suited particularly to local conditions.

Frigidaire's spring NBC radio program (The Jack Pearl-Patti Chapin series), these men think, was their most valuable sales promotion help in 1935. The FHA, too, has been an immense help in increasing sales among the lower income ranges. "A great stimulant," Mr. Du Pont called it.

Repossessions, the men agree, are unusually low—only about a half of 1 per cent. But, Mr. Wendel explains, "We give our customers lots of service, keep them satisfied—and we check credit ratings pretty closely before we make the sale."

Both men are agreed on the subject of refrigerants—and it holds no terrors for them. "No trouble with refrigerants," says Mr. Du Pont. "No point in changing," adds Mr. Wendel.

Both are also agreed that there are too many dealers, and that the industry out their way, as they see it, would be helped if quality, rather than quantity, were the guide in dealer selection.

"Too many dealers," says Mr. Wendel, "cause price cutting and other bad practices. Since the FHA, this has been more and more prominent. Dealerships are organized with no intention to merchandise honestly. This hurts good dealerships, and good lines as well—for these dealers display no interest whatever in servicing the jobs they have sold."

Warm words for Frigidaire came from both. Mr. Du Pont was satisfied "that we have enough to get our share of the business. The name alone gives us a good start." Mr. Wendel, saying that "Frigidaire is always a step ahead," admitted, however, that a change in shelf arrangement might be a help.

* * *

FHA 'The Best Thing Ever'

An interesting insight into the commercial refrigeration situation in San Diego came from A. K. CHAMBERLAIN, commercial manager of H. L. Benbough, Ltd., Frigidaire distributor. Out of a 1,200 total for the distributorship in 1936, he expects at least 150 to be commercial condensing units.

Salesman turnover is no problem to Mr. Chamberlain, even though his payment plan calls for commission only. Commercial sales possibilities with Frigidaire are such that, when a salesman lands with the company, he stays landed. At present, Mr. Chamberlain has under his supervision six full-time and six part-time salesmen.

All his salesmen are well-trained—by daily meetings, for actual sales work, and by Frigidaire technical schools, for mechanical information on commercial and air-conditioning units.

Best sales promotion drive he took part in last year, Mr. Chamberlain thinks, was the Refrigeration Bureau's exposition during November and December at the Municipal Pier. Interest in commercial refrigeration and air conditioning generated by this exhibition, he feels, built up his prospect list and furnished some top-notch leads for exploitation during this year.

If the FHA ever goes hunting for a man who's 100 per cent sold on it as a sales getter, it needn't look further than Mr. Chamberlain. "The best thing that ever happened to the industry!" he calls it. Only one-half of 1 per cent of the distributorship's whole 1935 output, in time-payment sales, had to be repossessed.

Asked about his experience with refrigerants, Mr. Chamberlain said they hadn't been a source of trouble or annoyance on any of the jobs he'd sold last year. "Of course," he added, "we use Freon wherever we can."

For the industry's good, Mr. Chamberlain thought it would be wise to limit operations to fewer and more reliable dealers. And, if it could be done without impairing efficiency, he thought it would be a good idea if commercial units could be made to operate more quietly.

* * *

'Fewer and Better Dealers'

B. H. ROGERS of Firestone Auto Supply & Service Station, was one of the few dealers present who didn't recognize the NEWS at sight or hearing. But that, he said, was because he had never been approached in regard to it. Needless to add, that little matter was taken care of, then and there.

Sales this year ought to be about 300 units, Mr. Rogers said. Three salesmen are employed by the firm now; seven will be on the job when the "busy season" gets under way. Commission payment only, is the firm's rule, with the average around 10 per cent. Experienced men only are hired.

"My method of getting salesmen," said Mr. Rogers, "is to locate a good man with another firm, and then try to get him to come with me. Good men are very hard to get in San Diego.

"I don't hire inexperienced men, because, during the busy season, I don't have the time to train them. When things are at the peak, we hold a sales meeting every morning, to discuss plans and exchange ideas."

Best promotion, Mr. Rogers holds, is through constant newspaper advertising. He has also successfully employed the giving away of a small premium to the housewife-owner.

FHA Mr. Rogers has found a good means of increasing sales. About 15 per cent of his sales are for cash, and repossessions amount only to about 1 per cent, he said.

He is also strong on the subject of an over-abundance of dealers. "I'm for fewer and better dealers," he says. He'd like a new idea in a door shelf as one improvement on models of the future—"different from the kind they have now," he adds.

* * *

'Forget About Gadgets' Advises Dealer Brown

J. T. BROWN of Parmelee & Copemann Co. said the NEWS was "dependable, first with the news," and that all the men in his department demanded to see it as soon as it was received. He expects to sell 350 units this year.

The firm employs five salesmen the year around, paying them a guarantee against commissions, with no holdbacks, and each month a closed account, except on repossessions or "reverts." Getting the men is no problem, either. "Having the best job to offer in the city, we always have the best local men waiting to sign up with us," Mr. Brown says.

Salesmen are trained by regular weekly sales meetings, using manufacturers' sales training tools. In addition, open forum meetings are a real source of new and varied sales slants, Mr. Brown finds.

Consistent newspaper advertising on a special sales drive, and striking window displays, in the order named, are the firm's two leading sales promotion tools, Mr. Brown says. "FHA is the greatest sales aid ever offered, and we use it for 30 per cent of our business," he avers. Counting FHA, the firm does about a 40 per cent cash business, with only 2 per cent repossessions.

The refrigerant situation, Mr. Brown thinks, is nothing to get all "het up" about, but a change to a less irritant kind would eliminate a lot of sales resistance, and take a talking point away from ice refrigerator salesmen.

The whole industry would be aided, in Mr. Brown's opinion, if distributors would limit dealerships to fewer and better companies, companies with a greater sense of responsibility toward servicing and caring for customers' complaints.

He'd like to see all manufacturers go to a one-year guarantee, and forget about gadgets and extra dishes for a while. More silent operation, too, would be a help, he thinks.

* * *

Mail Order Representatives Give Their Slant

Both Sears Roebuck and Montgomery Ward were represented at the meeting—the former by Divisional Manager C. L. ROBINSON, and the latter by Manager M. L. RUTAR. Both said their departments read the NEWS, thought a great deal of it.

"The most enlightening publication available today on detail information in refrigeration," Mr. Rutar said, while Mr. Robinson added that he and the men in his department would appreciate getting more statistical information, such as the NEWS carried last spring on domestic, commercial, and air-conditioning models.

Sears Roebuck will merchandise about 1,500 units this year, Mr. Robinson said. Mr. Rutar set his firm's San Diego figure at 350 units.

Sears has five salesmen, paying them a drawing account against their commissions; Montgomery Ward, four outside men, paying salary and commission. Sears has no turnover in outside salesmen, Mr. Robinson said. "We get most of our men through personal contacts, and through recommendations by friends."

Turnover is no problem with Ward, either, says Mr. Rutar. "We haven't made any changes in two years," he says. "We pick out the man we want, and go after him."

Both stores have regular sales meetings, at which current selling problems are discussed and competitors' merchandise studied. In addition to its regular business meetings, Sears has several during the year for "good fellowship" only, Mr. Robinson stated. "Ward Week" was Ward's most valuable promotion during the year. For Sears, the best promotion was in cooperation with the Electric Club in San Diego.

Both stores found the FHA a mighty fine sales stimulator, although Mr. Rutar said most of Ward's sales developed into Ward payment plan, financed by the company itself. Both reported repossessions practically nil. Ten per cent of Sears' sales, 5 per cent of Ward's, were for cash, the men said.

Mr. Robinson reported "little trouble with competition on refrigerants," while Mr. Rutar said that "methyl chloride has given us less trouble than our sulphur jobs."

About the number of dealerships, the men were at variance, however. "I do not think there are too many dealers," Mr. Rutar said. "It promotes the industry, and makes more people refrigeration-minded." Mr. Robinson

(*Concluded on Page 13, Column 1*)

Urbane Mr. Bauder—One Of a Noted Foursome

Less than a decade ago in Cleveland a quartet of friends made up a regular golf foursome every Saturday.

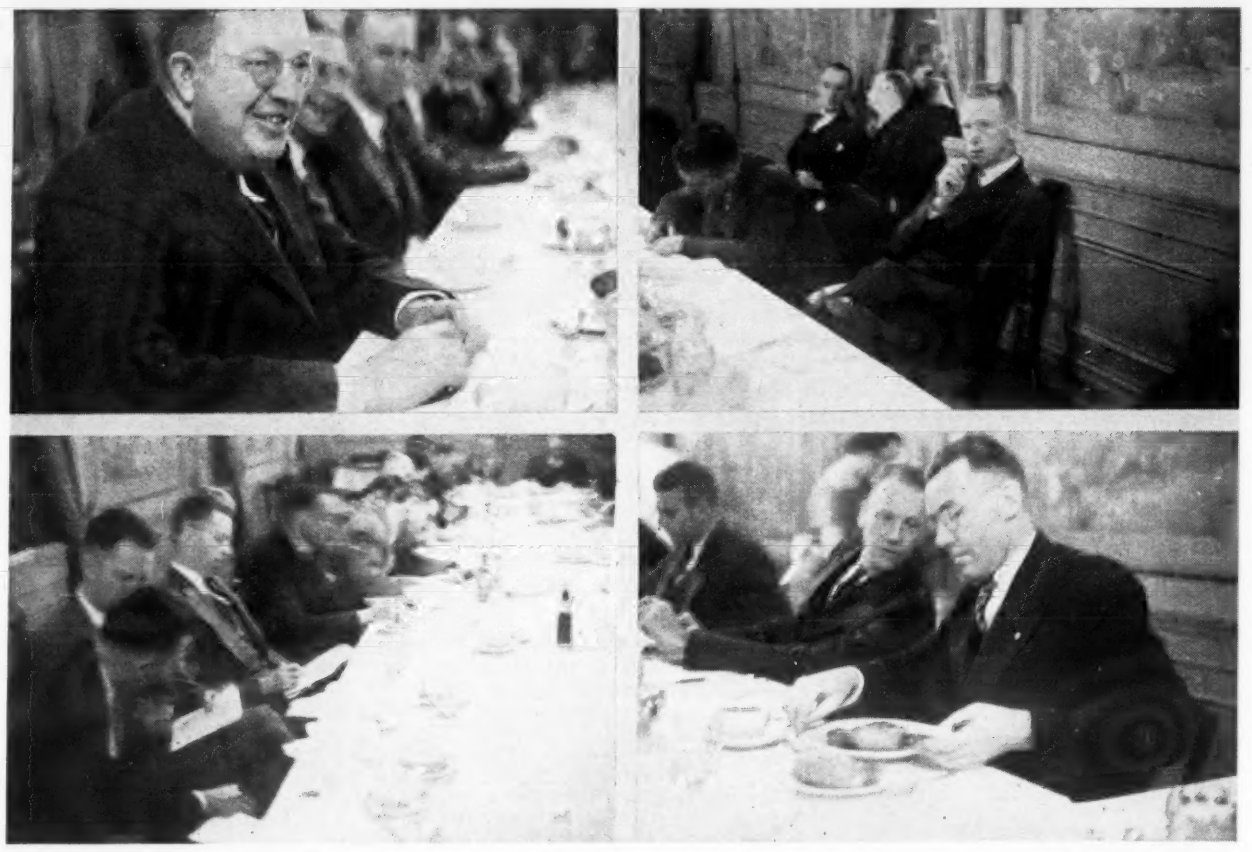
They were TED QUINN and PAUL ZIMMERMAN of the incandescent lamp department of the General Electric Co., Attorney GEORGE BAUDER, and GEORGE BELSEY, vice president of Fuller & Smith, an advertising agency.

When Quinn and "Zim" organized the General Electric refrigeration department, friends Bauder and Belsey organized distributorships in San Diego and Los Angeles, respectively. All four prospered.

Mr. Bauder, whose office we used in San Diego, is an urbane gentleman with a cosmopolitan finish. He studied at the Sorbonne in Paris, and at Heidelberg in Germany. A daughter is now at Stanford.

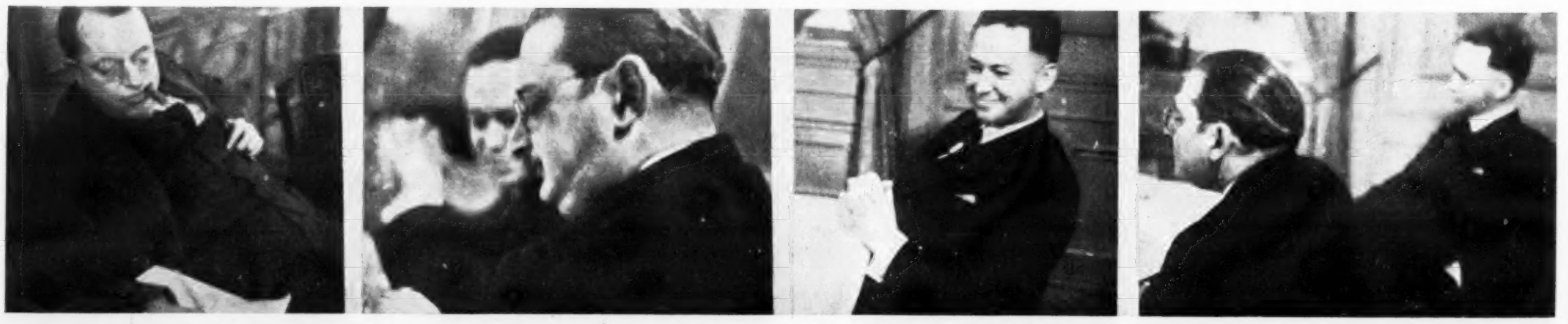
Today Mr. Bauder combines aggressive appliance merchandising with the cultivation of his tastes for grand opera, urbane expression of the English language, and the gentle art of good living in a most successful manner. (Mr. Bauder is the gentleman in the second picture at the left below.)

San Diego Merchants Go to School Again

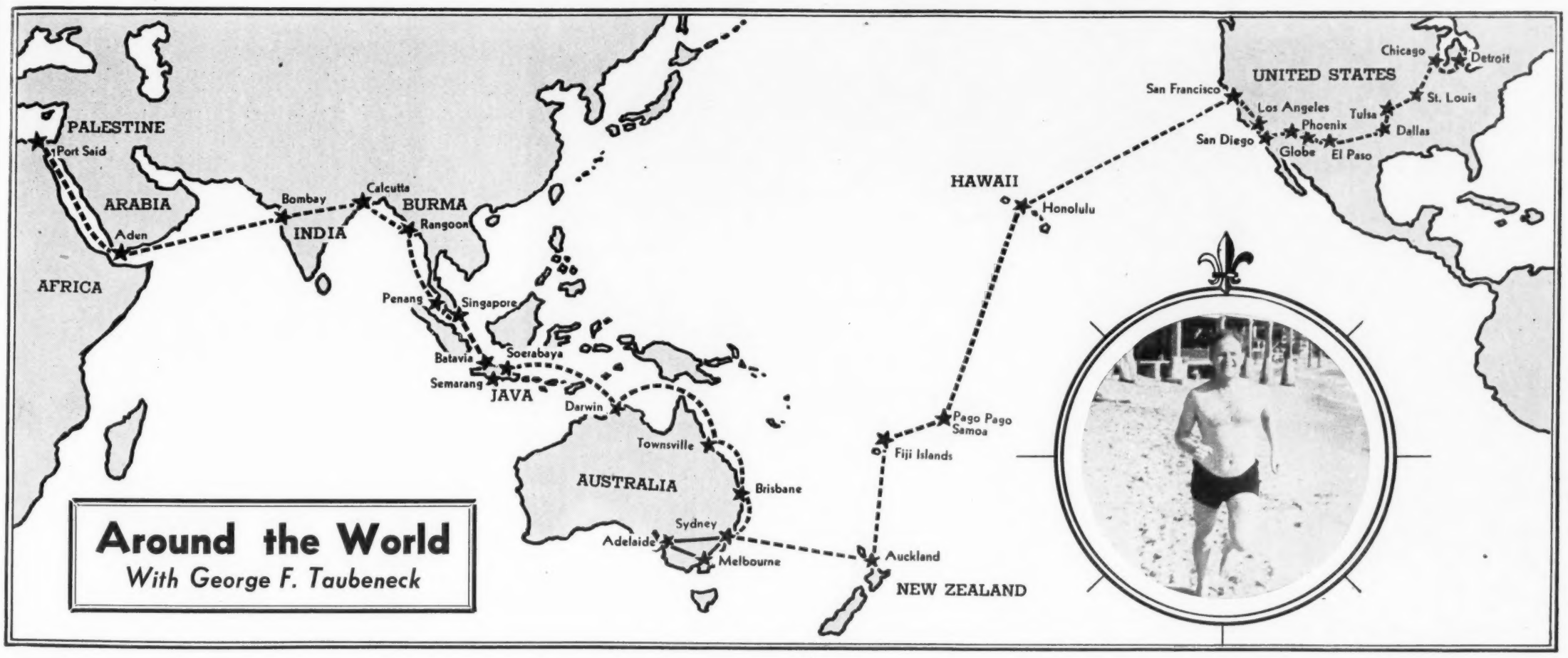


(Upper left) U. S. Grant tells Taubeneck that he'll be lucky if he gets $100 for his car. (Lower left) Leo Maier, Glen Dutton, and George Ray hard at work on answering the questions which the editor put to them about how they conducted refrigerator sales operations. Their answers are reported on this and the preceding page. (Upper right) one of the questions must have stumped Sam Hall (foreground), head of the Westinghouse distributorship. In the background A. W. Weth whispers to "Frosty" Raymond of the power company, while in the left foreground P. L. Robinson of Sears, Roebuck finds the answer. (Lower right): J. Clark Chamberlain, secretary of the highly-regarded San Diego Bureau.

When the News Editor Met San Diego Distributors and Dealers at a Luncheon



U. S. GRANT — GEORGE BAUDER — HARRY CALLAWAY — MR. BAUDER and MR. CALLAWAY



(*Concluded from Page 12, Column 5*)

said that, if there were not too many dealers, "at least they should be kept out of drug stores and clothing stores."

Mr. Robinson didn't suggest any changes or improvements in Sears' refrigerator models, but Mr. Rutar thought a "tray release for ice cube trays would be a good feature" for his company's units.

* * *

Department Store's Sales Upped by Cooking School

Only department store man present at the luncheon was F. M. PITT of Walker's department store. He reads the NEWS, likes it, says "it clears up many questions brought up by customers." With seven salesmen, paid on a commission basis and drawing account, he hopes to sell 400 refrigerators this year.

Main source of good salesmen, Mr. Pitt has found, is the distributor, and he gets most of his good men in that way. He trains his men by weekly sales meetings, and standard factory sales courses.

The store's best 1935 promotion was a series of cold cooking classes, at which housewives were given information on how to get the most good from an electric refrigerator. This attracted many prospects, and led to a number of sales.

FHA, Mr. Pitt says, has been a fine thing for San Diego sales, especially among the smaller dealerships. It has been a fine thing for Walker's, too, for about 75 per cent of the store's 1935 sales were made under that plan. Only about 2 per cent of the sales had to be repossessed.

Mr. Pitt added his opinion to the chorus who insisted there were too many dealers for the good of the industry in the San Diego territory.

* * *

Ware also Decries Oversupply of Dealers

The frank, unbiased treatment that the NEWS gives all its editorial material was what most appealed to JOHN ALLEN WARE, sales manager of George T. Bauder Co., General Electric distributor. His sales for this year, he estimates, will total at least 1,000 units, through both wholesale and retail outlets.

The Bauder Co. employs 10 salesmen at the peak season; just now, seven are employed. Payment is on a straight 10 per cent commission basis, with a 1 per cent bonus every month the quota is made, payable in a lump sum in December.

Mr. Ware doesn't find it easy to get the type of salesmen he wants. Classified advertising brings in a few good men, he finds, but he's constantly searching for others, through other means. His men are given the La Salle-General Electric training course, amplified. First they receive three to four days of intensive training; followed by regular meetings to keep up with the progress and development in the field.

His best promotion, Mr. Ware said, is a gift to his salesmen for doing a good selling job throughout the year, plus a special bonus for them at Christmas time, the period Nov. 18 to Dec. 23, inclusive.

FHA has proved a big sales stimulant to General Electric business, Mr. Ware says. He is of the opinion that the same financing rate could well be used by other than government agencies; by private banking institutions, for example. Repossessions for 1935 were very few—only about 2 per cent. Cash sales were around 10 per cent.

The refrigerant problem isn't a live one to Mr. Ware. Bauder Co. has had no troubles with it, he says. Sulphur dioxide, in his opinion, is a fine refrigerant for any climate. "We are using SO_2," he says, "but in a real sealed-in steel refrigerator.

"We have too many dealers in San Diego—and I don't mean G-E dealers, either," is his comment. "We have four G-E dealers in town, but most of our competitors have from twice to four times as many. The resulting price cutting is deplorable."

Mr. Ware is satisfied with the present G-E line—and he hopes the company will continue to stay away from gadgets. "We sell simplicity, economy, and freedom from service worries," he says. Too many gadgets, he thinks, would just be another source of useless trouble.

* * *

'Jobbers Shouldn't Sell at Retail' Says Dealer

Two men from San Diego Auto Electric Corp., Grunow-Kelvinator-Gibson dealer, were present—E. B. HAZIE, manager, and W. V. LAMBETH, sales manager, both regular NEWS readers.

Their anticipated sales for the year, these men said, are between 250 and 280 units. The firm employs six full-time salesmen, paying them a straight commission, and 10 part-time men, on salary and commission. The men are obtained through personal contacts and recommendations from salesmen already employed. Half of the men, the managers say, stay on right through the year.

Training consists of individual instructions for each beginner, plus regular weekly meetings throughout the season.

Although the firm had no special promotion stunt itself, both men said they had obtained much good from the Electrical Show which the San Diego Bureau held last November and December. Old customers, also, were a prolific source of sales leads, the men added.

Both men thought the FHA was very good for their 1935 sales. "It gives prestige to your efforts," was Mr. Hazie's way of putting it.

Repossessions, the men said, were only about 2 per cent all year. Cash sales average better than 10 per cent.

Refrigerants had given the firm some trouble in the past, both men said, but they approved of the present trend toward safety. "The value of a safe refrigerant is vital in selling," Mr. Lambeth said.

Both were for fewer dealers, and better ones. "Making it harder for dealers to obtain franchises, by establishment of higher requirements," would help, both men thought.

The best thing which could be done to improve local conditions, Mr. Hazie said, would be elimination of distributor arrangements with retailers, meaning the operation of branch stores by distributorships, in competition with other retailers. "Jobbers should sell at wholesale only," he said.

* * *

The San Diego Bureau And What It Does

Under Mr. Chamberlain's alert, able direction, the Bureau of Radio and Electrical Appliances of San Diego County has blossomed into one of California's most potent refrigeration merchandising forces. The Bureau's work must be reckoned as one important factor in enabling the industry in 1935 to nearly double its sales of the previous year in California.

Mr. Chamberlain is proud of the Bureau's 1935 work; but, even so, he doesn't aim to let it cramp his enthusiasm toward what 1936 will bring. Listen to him:

"Predictions made last year were full of optimism; but with every quota far outdistanced, and with all-time records established for most appliances, we fared better than most of us believed possible.

"A fitting climax to a grand year was our unprecedented volume of Christmas business. Refrigerators, which we had always hoped would sell generously at this time of year, really delivered during the recent holiday season. Final records have not yet been compiled, but a preliminary survey shows that sales of refrigerators have been more than double the number sold in December of last year. In fact, all types of electrical appliances sold last year in such volume as to make one wonder where the business was coming from."

Despite the fact that saturation points of a number of appliances have mounted rapidly, Mr. Chamberlain sees no reason why 1936 should not top even the great volume of electrical business done during the year just closed. He predicts substantial increases, perhaps 20 per cent, and says the Bureau is prepared to help make this prediction come true.

* * *

Plan Biggest Campaign For This Year

"Our cooperative campaigns of the past year have been the strongest yet—but this year will find our organization promoting the welfare of distributors and dealers as never before," he declares.

The Bureau's first campaign will be on radio sales, and Mr. Chamberlain was just completing the details when we were there.

When any organization does as bang-up a job as this one evidently did, it's always a good idea to go back over the period during which record-breaking marks were set, and fine-tooth-comb it for merchandising suggestions of benefit to others.

* * *

A Month-by-Month Resume of Bureau Work

This we asked Mr. Chamberlain to do; this, he did. And here it is, month by month:

"Our activities for the year opened in January with an automatic ironer campaign, consisting of 16 newspaper advertisements.

"February and March we turned over to our short-wave radio campaign, 'Calling All States.' This opened with a dinner meeting on Feb. 6, with radio amateurs and officials of the San Diego Exposition as our guests. During March, upwards of 10,000 radio blanks were picked up from dealers' stores, and thousands of radio messages were sent.

* * *

Chilled Food Institute And FHA Promotion

"Refrigerator advertising started in April, building up to the second annual Chilled Food Institute at the San Diego hotel from April 27 to May 1. The exposition aroused tremendous interest among the general public, and all makes of refrigerators were shown, by invitation.

"FHA possibilities, in relation to refrigeration purchases, formed the background of a strong refrigeration campaign in May. Thirteen large advertisements, totaling 800 inches, and an outdoor tie-in helped to stimulate public interest in the drive. Several banks cooperated with the Bureau, carrying their own advertising."

All in all, the campaign did a great job of bringing possibilities of FHA home to the public, at a time when FHA was considerable of a mystery to them.

Also in May, the Bureau took an active part in warding off a proposed 10 per cent luxury tax on radios, through the circulation of petitions and a barrage of telegrams to state legislators in Sacramento.

In June, though, the Bureau scored its knockout campaign, in a refrigeration way. It was called the "Magic Words" campaign, and here's Mr. Chamberlain's description of it:

"We used both local radio stations each week for seven weeks, and ran generous newspaper copy, both in the city and the county. We had an outdoor showing, a streetcar front ad, and furnished every dealer with an attractive tie-in window card.

"Each of the 14 broadcasts featured a different refrigerator—14 were sold here at the time—and, from these names, 'Magic Words' were to be formed and submitted by contestants.

* * *

450,000 Words Entered In Novel Contest

"The contest carried through July, and kept us busy checking the vast number of blanks sent in for judging. More than 450,000 individual words, each built around the name of some refrigerator, were entered and judged."

August saw the bureau launch a second FHA drive, featuring all manner of eligible appliances, and using 15 advertisements of 48-inch size. Banks in the county again cooperated.

The thirty-fifth birthday of electrical appliances in San Diego county was celebrated in September, with a "birthday banquet" at El Cortez hotel honoring old-time dealers and purchasers. In September, also, a "Radio Appreciation" campaign was launched, consisting of a Sunday night radio preview of outstanding programs for the week, and emphasizing the need for a modern radio to get the most out of modern broadcasts.

The Bureau's big Christmas campaign broke on Nov. 17, using the "She Hinted, She Got It" theme. Eighteen 75-inch ads were run in newspapers during November and December, all on this theme. A billboard and streetcar poster campaign went up on Nov. 26, with duplicates supplied to dealers for use in their window displays.

* * *

Newspaper Advertising Had Big Role in Xmas Plan

The general Christmas campaign carried all through December, opening with the Bureau's third annual Electrical Exposition in the Municipal Pier buildings. Staged as a Christmas show, with the deliberate intention of inciting visitors to buy, the exposition exceeded the expectations of even its most sanguine backers.

Attendance was more than 80,000 for the four days of the show, and as Mr. Chamberlain says, "selling, or taking orders, was first on the order of events." Plenty of merchandise was sold during the show proper—but thousands of buyers, disdaining to buck the crowds, picked their presents there and bought from their own dealers later.

"Everyone in the show," said Mr. Chamberlain, "is convinced that it had a great deal to do with establishing our December all-time appliance sales record here."

* * *

Mr. Chamberlain Gives Credit to the Members

The Bureau's 1935 success, Mr. Chamberlain feels, would not have been possible without the fine cooperation with member distributors and dealers gave it from beginning to end. Dealer tie-in advertising was especially valuable in boosting sales to unprecedented peaks. He's proud of his dealers—their cooperation in campaigns, advertising, and the way they turn in their regular monthly sales reports—and he isn't at all hesitant about saying so.

Two more parties are on Mr. Chamberlain's "credit" list: San Diego Consolidated Gas & Electric Co., and "Frosty" Raymond—the former for its ever-present help in contributing advertising funds to Bureau drives, and the latter for conceiving the theme of most of the campaigns.

* * *

News Editor Arrives in Australia

A cablegram received Monday, Feb. 24, announced the arrival in Sydney, Australia, of George F. Taubeneck, editor of ELECTRIC REFRIGERATION NEWS. He reports a grand welcome by the leaders of the refrigeration industry in that city. On the same day the regular mail brought reports of his marvelous reception in Honolulu, together with a large number of pictures of interesting scenes from the entrancing Hawaiian Islands. (The picture in the circle shows George enjoying the beach.)

The above chart shows the route of Mr. Taubeneck's journey starting from Detroit on Jan. 8. Each week he writes about his experiences, telling about the people he meets and the refrigeration activities, with a vivid description of the points of local interest and general observations regarding the country and its customs.

Mr. Taubeneck is scheduled to arrive in Singapore, Straits Settlements, March 28. On April 14 he is due in Calcutta, India, where he may be reached in care of Refrigeration (India) Ltd., 62 Hazra Road. He expects to cross India by train to Bombay where he may be addressed in care of Ahmed A. Fazelbhoy, New Queen's Road.

On April 25 he will sail from Bombay on the *S.S. Moloja*, making a short stop at Aden, Arabia, and arriving at Port Said on May 3. He will then spend a few days in Palestine, where he may be reached in care of Max A. Greenburg, Manager, Palestine Branch, British Thomson-Houston Co., Ltd., 26 Gruzenberg St., Tel Aviv, Palestine.

About May 15 he will arrive in Marseilles, France, and will go directly to Paris where he will make his headquarters during several weeks in Europe. There he may be reached in care of H. A. Granary, Frigeco, S. A., 79 Avenue Des Champs Elysees, Paris (8e) France.

Night view of the Avenue of Palaces at California Pacific International Exposition. Spectacular night lighting effects will be a feature this year.

Palace of Electricity, Which Houses Refrigeration Exhibits, Opens March 15

The re-opening of the San Diego Exposition Feb. 12 was not really a formal opening, but more of a "winter preview." The formal opening will not be until March 15, at which time the Palace of Electricity, in which the refrigeration exhibits are housed, will be thrown open to the public.

Thus Editor George Taubeneck in his pre-view story of the Exposition, which starts on the opposite page, isn't able to tell you much about the refrigeration exhibits, although we have since learned that refrigeration exhibits have been definitely arranged for by Crosley, Fairbanks-Morse, Frigidaire, General Electric, Grunow, Kelvinator, Leonard, and Westinghouse.

Air conditioning probably will not be stressed, says J. Clark Chamberlain, who is director of the Palace of Electricity, "due to the well-known fact that this part of the country has little need for it," as he puts it. However, it is expected that some air-conditioning equipment will be exhibited by Frigidaire, General Electric, and Westinghouse.

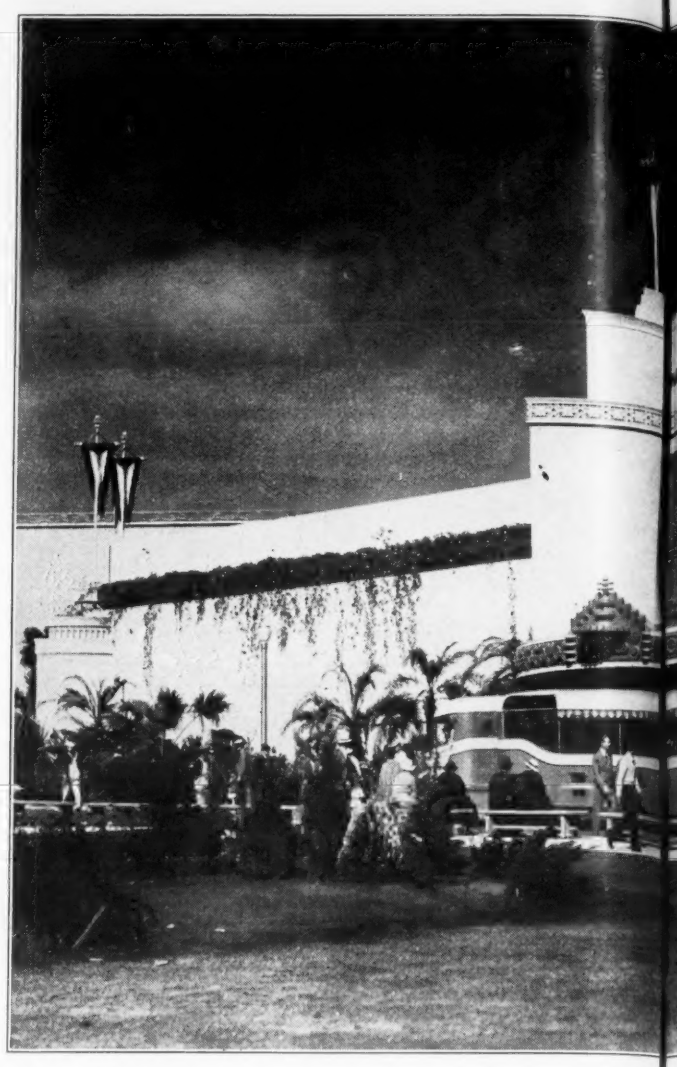
The Palace of Electricity is being sponsored by the San Diego Consolidated Gas & Electric Co. The building has a gross area of 19,000 sq. ft., and is split up into a number of booths, all uniform size, and each with a 20-ft. frontage. Of course, some of the exhibits will occupy a number of spaces, and will thus have larger areas.

Under the direction of Mr. Chamberlain, the Palace of Electricity is being revamped from top to bottom to make it the most beautiful exhibit hall on the grounds (which is the principal reason why it was not ready for the "winter preview" opening).

All former lighting equipment is being torn out and the finest possible overhead illumination is being installed. Illumination in the building this year will be six times greater than it was last year.

A special luminous doorway is being constructed to give radiant outline to the entrance. The unique lighting system for the exterior completely covers the Palace with a bath of colored light which gradually changes, running in a cycle of 2 minutes and 40 seconds from the beginning to the end of the color spectrum.

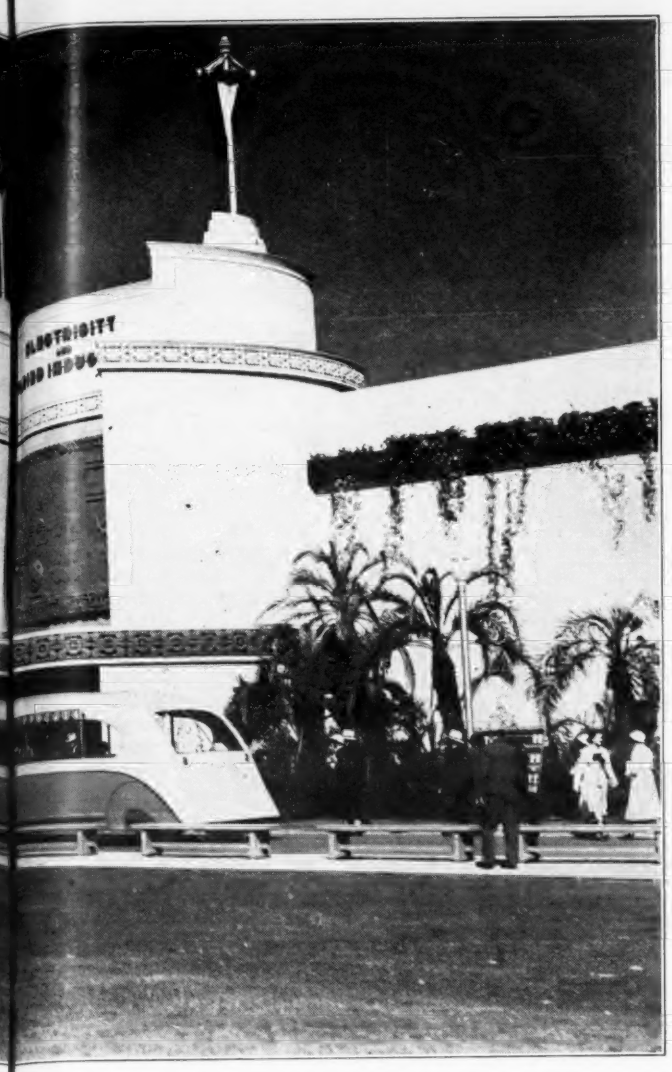
Inside, plans are being carried out to provide greater comfort and convenience. Several spacious lounge rooms are being installed with facilities for reading and writing. A separate auditorium where motion pictures can be shown is provided for the use of participating exhibitors.



Above: Entrance to the Palace of Electricity and V Industries. This building will house all refriger exhibits, and is now being renovated in preparatio the formal opening next month.

Left: Lively Llireva Averill, captain of the Exposi corps of one hundred page girls.

Left: A day-time view along the Avenue of Palaces, looking west. Above: Mod demonstration village of miniature homes, with Joy Williams sunning herself on



The House of Hospitality (left) and the Cafe of the World, mirrored in the lily pond. The natural beauty and attractive landscaping of the Exposition grounds adds much to the setting for the various "Palaces."

California Pacific Exposition Re-Opens With Larger Exhibits, New Features

SAN DIEGO—Taking an encore from last year's success, the California Pacific International Exposition re-opened here Feb. 12, newly arranged, completely relighted, and bigger than before. Many of the buildings are being revamped, the amusement zone has been reconstructed, and many new attractions await visitors this year.

The Federal Housing Administration's exhibit in the Palace of Better Housing consists of 12 "talking towers," booths, dioramas, signs and murals, all illuminated and especially designed for the Exposition.

The "talking towers" are 17½ feet tall. Around the base, about 3½ feet from the floor, is a glass-enclosed panel in which are models of homes, placed on miniature landscaped lots. Some of them represent new construction and some of the various phases of remodeling. In all cases the cost of the building or improvement shown in the panel is given in illuminated lettering immediately above.

Through an ingenious arrangement of sound equipment, a constant flow of audible information emanates from the top of the tower, for the benefit of spectators and listeners who are within a 6 or 8-foot range. This talk answers all questions that might be asked about the structure illustrated in the panel near the base and offers many suggestions on home building and renovation. Music accompanies the talks, so that continuous entertainment is provided those who are within hearing distance.

No two of the 12 towers are alike, thereby enabling those interested to obtain a wide range of information concerning building and remodeling, which can be financed through Federal Housing Administration insured loans.

Upon entering the grounds, through either the west or east gates, the visitor's first glimpse is down the long Avenida de Palacios, a landscaped street of exquisite tropical beauty, flanked on either side by buildings, or "palaces" constructed for the 1915 exposition and which were so perfect in their resemblance to the finest types of Spanish Colonial architecture to be found anywhere in the western world, that the citizens of San Diego refused to permit them to be torn down.

These have been made permanent structures; and now, in their setting of tropical foliage, brilliant flowers, towering trees, and trailing vines, they

(*Concluded on Page 16, Column 3*)

ove: Jean Parker, star of the motion picture, Sequoia," fondles a friend at the Exposition's zoo.

t: Ach du lieber! Max Ekthorn, genial waiter at the Bavaria Gardens.

t: Carmel Montel, vivacious senorita, who is among the many entertainers at the Exposition.

Above: A cactus garden, adjacent to the Palace of Education. Right: Strolling troubadours, in full Spanish regalia, entertain Exposition visitors in the patio of the House of Hospitality.

Around the World

With George F. Taubeneck

San Diego, Calif.

Old Spain, the covered-wagon pioneer spirit, the Army and Navy, and the bursting-with-pride Rotarianism of the beauty-starved middle westerner who has found a new life in a land of loveliness—all are fused into a civic consciousness which is at once naive yet tradition-steeped, self-satisfied yet ambitious, sun-and-wine warmed yet energetic—in San Diego.

Plymouth Rock of the West Coast, San Diego was charted on the Spanish map of the New World in 1542 (just half a century after Columbus first set foot on an American shore) by a Portugese sailor, Juan Rodriguez Cabrillo.

Six decades later it was visited—and christened with the name it bears today—by Spanish Explorer Sebastian Viscaino, who reported that here was an excellent spot for settlement.

And, following the conquest of Mexico and gold-plated Peru, Spain did send a three-ship colonization party to San Diego, led by Father Junipero Serra, in 1769.

Upon Presidio Hill in "Old Town" are an ancient palm, a rugged cross, a museum, and decaying walls to bear remnant witness of this earliest California civilized habitation in which spreaders of the gospel, wielders of the sword, and seekers of gold commingled pleasantly and comfortably.

From 1811 to 1822 Mexicans worried the Spanish rulers of San Diego until they gained control; and by 1834 they had confiscated the mission property and were having a high old time.

But the American flag marched over the hills in 1846, and under John C. Fremont the United States took possession. Incorporation followed, but this Old World plant did not flourish under the sterner U. S. cultivation, and the charter was rescinded. By 1867 there were no more than a dozen die-hards left.

Entered then upon the scene an American promoter, A. E. Horton, who laid out what was then considered the outlines of a model city, and wangled the establishment of a military establishment on the harbor-protecting promontory known as Point Loma.

In three years' time Promoter Horton had induced more than 2,000 citizens to take residence there; and when the transcontinental Santa Fe railroad came to town, he saw his efforts result in a real estate boom of no mean proportions.

With Horton the promotion spirit did not die in San Diego, for in 1915 civic enterprise created the Panama-Pacific exposition, which drew the world's attention to San Diego, and doubled its population. Today the city has more than 150,000 residents.

* * *

The Fleet's In

Most familiar sight in San Diego is the skin-contoured uniform of the sailor. A strategic naval base, San Diego is the permanent training and manoeuvering center of a large portion of the United States Navy.

More than 20,000 men are stationed at this naval operating base. When you consider that their monthly payroll amounts to $2,000,000, and that practically all of this is spent as fast as it is received, you know how important the navy is to the business life of the city.

This operating base includes a naval air station, Marine base, fuel depot, radio stations, destroyer base, naval hospital, supply depot, training station, and headquarters.

Every day residents of San Diego are treated to undersea, aquatic, and aerial demonstrations of the variety which invariably excite your pulse and quicken your pride when you see them in the news reels.

* * *

Landlocked Serenity

That landlocked, current-free harbor which led to San Diego's founding, and brought the United States Navy to its shores, is the city's principal asset. In all seasons and weather conditions this harbor affords safety and ease of access to every variety of vessel.

There are only two other natural deep-water harbors on the strangely unlacerated Pacific Coast.

With an area of 22 square miles, this harbor contains two municipal piers and a number of wharves, together with a full quota of warehouses, elevators, and railroad spur lines.

It is the closest Pacific Coast port to middle western and eastern freight centers.

From the Army's Point Loma you can see this magnificent warship-studded blue bay in all its glory. And behind the leashed battle cruisers rises a picturesque city of scintillatingly modern white commercial buildings and red-tile-roofed residences flashing against the deep-dyed foothills beyond.

Palm-lined residential streets enclose the 1,400-acre Balboa Park, site of the 1915-16 and the 1936 San Diego expositions. Here Spanish Renaissance and modernistic architecture blend without apparent conflict underneath a palm-etched azure sky. In non-exposition years a fine program of musical and artistic events are promoted here.

Semi-tropical flowers and trees bloom the year 'round here, and enhance greatly the modified Mediterranian architecture which San Diego has helped pioneer and develop.

* * *

Industry Varied

San Diego manufactured products include airplanes, canned fish, olive oil, marble, soap, bricks and tile, gas heaters, macaroni, salt, onyx, candy, cement pipe, and citrus products.

Labor is cheap and plentiful here, and unusually content, because of the climate.

Now about that climate. You'll hear so much bragging about it in San Diego that you'll sicken of the subject. (But just wait till you get to Los Angeles, where they really *do* talk about the climate.)

It really is pleasant, with an equable temperature, soothing ocean breezes, abundant sunshine, low humidity, low altitude, and cold nights which maintain vigor.

Storms are rare. Variation in temperature between coldest and warmest months is no more than 14 degrees.

San Diego claims to be the most important tuna packing city on the Pacific Coast. A big fleet of Diesel-powered tuna fishing boats cruise out thousands of miles to bring back tuna to five canneries.

Mining activities in San Diego s vicinity include the unearthing of granite, graphite, feldspar, fuller's earth, clay, limestone, silica, salt, marble, and gold.

* * *

Religious San Diego

A priest founded San Diego; and preachers, priests, and parsons still have the situation well in hand.

To every 1,000 of population there is a church. Roman Catholics still predominate, with 23 churches; but the Baptists press close behind, with 20.

Every other sect and denomination you ever heard of is represented, from Free Methodist to Christian Scientist, Jewish Reformed to Latter Day Saints (Mormon), Quaker to Spiritualist.

The historic missions of San Diego de Alcala, Pala, and San Luis Rey de Francia are located in the county.

One rather deep-browed sect is the International Theosophical Society, which has its World Center in San Diego.

Here in 1900 the wealthy Katherine Tingley gathered together a brilliant international court of Theosophists, housed them in a munificent Temple of Peace, founded the Lomaland School for Boys and Girls and the Lomaland Conservatory of Music, and built America's first open-air Greek theater.

All these endowed activities are still going, still occupying a beautiful habitat. In addition, this sect now operates a chartered Theosophical University, founded in 1919, on the spacious grounds.

* * *

Sporting San Diego—Tiajuana, Agua Caliente

Water sports are naturally indulged in by San Diego residents, and particularly by naval families. All the familiar land sports are popular, too, with mountain climbing thrown in for the hardy. Two hours after you doff snowshoes you can be aquaplaning.

Across the bay is Coronado, with a famous resort hotel, an even more famous Tent City, and sumptuous residences. Fine living is practiced by the more elite in suburban LaJolla.

But best known to the rest of America is Agua Caliente, 18 miles over the border into Mexico, where the movements of the ponies before a gaily dressed crowd of socialites and the questionably rich are wired to smoke-hazy dens and small cigar counters all over the country.

Tiajuana, Mexico, is just 16 miles distant from San Diego. It offers long bars, cheap Mexican night clubs, a divorce mill, and your first taste of tequilla, a knockout brew of cactus needles.

Array of Industrial Exhibits and Much Gay Entertainment Await Visitors At California Pacific Exposition

(*Concluded from Page 15, Column 5*)

impress one as having been here for centuries.

Included in this group of buildings are the Palace of Natural History, where nearly 400,000 specimens are on display; the Palace of Fine Arts, which houses an $800,000 permanent collection of art treasures; the Palace of Science, housing one of the greatest archaeological and anthropological displays in the country; the Palace of Medical Science; Palace of Better Housing, in which the government is placing a $150,000 exhibit, along with scores of displays from building material dealers; the Palace of Foods and Beverages, containing 40,000 sq. ft. of floor space devoted to scores of interesting displays; the House of Hospitality; the House of Charm; and the Administration Building, which houses the offices of the exposition.

The Avenida de Palacios is intersected about halfway through the park by picturesque Plaza del Pacifico, in which stands the gigantic Arch of the Future. On either side of the arch are large rectangular pools, bordered by colorful flowers.

* * *

Free Concerts

At the north end of the plaza stands the Palace of Fine Arts and at the south end is the great outdoor organ amphitheater, containing the largest pipe organ ever built and upon which daily free concerts are given. The amphitheater also is the scene of concerts, stage entertainments, and pageants throughout the exposition season.

The organ amphitheater is a great semi-circular area in which seats have been placed for 3,000 or more persons, and is flanked on each side by luxuriant tropical shrubbery and the ever-present flowers.

Second section of the exposition grounds extends south of the organ amphitheater and is known as the Palisades area. Here most of the new buildings have been erected, the architecture being a combination of the Pueblo and pre-historic types, so blended with the existing Spanish Colonial structures that there is no lack of harmony, but rather a co-ordination that not only is pleasing to the eye but depicts in graphic manner the beauty of the old in its progress toward the utility of the more modern types.

At the north end of the Palisades area, the centerpiece of which is beautiful Plaza de America, stands the Standard Oil Tower to the Sun, a prehistoric-type structure 108 feet tall, while at the south end is the gigantic Palace of Transportation, the sole strictly modern type of industrial architecture on the grounds.

* * *

100,000 Flowers

The Plaza de America is a show in itself. Stretching the full length of the area, it is ablaze with the brilliant blooms of more than 100,000 flowers and its broad sidewalks are lined with 130 towering palms.

Near the south end is beautiful "Rainbow Fountain," one of the largest fountains ever constructed and which is so designed that it casts a perfect rainbow every moment the sun is shining. At night its brilliant sheets of water are lighted from underneath, creating again the rainbow effect, with 30-foot silvery columns spouting from the center.

Daily musical entertainment is offered at the big Ford Bowl, adjoining the Palace of Transportation. Here symphony orchestra concerts, light operas, and other stage and musical entertainment will be presented all during the season.

Along the Plaza de America will be found the Federal Building, in which every branch of government is depicted, as well as many departments in each branch, all graphically portrayed by one of the finest exhibits ever assembled and displayed.

Nearby is the Palace of Electricity, Palace of Entertainment, the Palace of Education, the California State Building, and the Varied Industries Building. Branching away from each side also will be found smaller buildings of individual exhibitors and groups, including the House of Pacific Relations, Church of the Latter Day Saints, Christian Science Monitor, the Press Building, and the Palisades Cafe, second largest on the grounds.

* * *

Really Takes Two Days

At least two days are required to thoroughly do the Palisades area and then the visitor can wander back across the Avenida de Palacios, turn north on Calle Colon and reach the Amusement Zone.

This area has been completely rebuilt and is something of a new departure from accepted ideas in amusement circles. Instead of the customary crowded single street for the Midway section (as in Chicago's Century of Progress Exposition), the same plan of beauty has been carried out in the Amusement Zone that prevails throughout the grounds.

The Amusements have been grouped around a central plaza, 800 feet long and 120 feet wide. This plaza has been landscaped and planted and at one end a huge electric fountain flashes its colorful rays in keeping with the gaiety of the area.

* * *

Amusement Zone Rebuilt

All buildings in the Amusement Zone are of modernistic design and architecturally articulated, so that they present the appearance of being a single unit, although each is separate from the other. Miles of Neon tubing, dozens of giant sun arcs, and other lighting equipment make the area a dazzling scene by night and a colorful region by day.

At the north end of the Amusement Zone, which is occupied by three large Fanchon & Marco shows, a John Hix "Strange As It Seems" theater and museum and many other attractions, is a "Days of '49 Stockade," an area reminiscent of the roaring days in San Francisco when the eyes of the world were focused on the gold fields of California.

This stockade is built in the traditional western architecture and is approached from a wide porch. Inside is a relic room, containing souvenirs from famous men who came to California in the gold rush era.

Also typical are the large dance floor, 70 tables for diners, and two long bars for other refreshments. This stockade takes the place of Gold Gulch of last year and concentrates all the color and glamour of early-day history into a relatively small space.

* * *

Real Spanish Village

Adjoining the Amusement Zone is colorful Spanish Village, which has been constructed to preserve and portray to best advantage the picturesque architecture of villages in Spain and Mexico. Here the merchants display their wares in typical Spanish and Mexican manner and strolling street singers and troubadours complete the atmosphere of the setting.

In the center of Spanish Village is a large, awning-covered dance floor and nearby the visitor may rest and relax in Casa de Cuba, a smart Cuban Cafe that is a new feature this season. Floor shows and other entertainment are available each afternoon and evening.

* * *

Fun for the Kiddies

Enchanted Land is another new feature for the 1936 season. It is the childrens' paradise and is located near the entrance of the Amusement Zone. Here the juvenile visitors will find miniature railways, concession rides, and other amusement features designed especially for them.

The railway runs through a tunnel in a miniature mountain, and on the enchanted ride visitors see spouting volcanoes, candy land, and in grottoes are seen animated figures from Mother Goose lore, including Jack and the Beanstalk, Jack Spratt and his Wife, Little Red Riding Hood, Jack the Giant Killer, the Old Woman Who Lived in a Shoe, Hansel and Gretel, and others.

At the entrance of Enchanted Land stand two large animated clown figures, who bid the young visitors welcome.

* * *

CCC Work Shown

In the Palace of Natural History is a complete CCC exhibit, the type of work carried on by the Civilian Conservation Corps being demonstrated by graphic relief maps, actual specimens of the work, and members of the corps themselves.

In addition to the exhibits, many permanent features of the beautiful park are available to exposition visitors. These include the Botanical Garden, where every type of tropical and semi-tropical plant will be found growing in profusion. The large lattice-covered dome of the Botanical Garden is brilliantly lighted at night. In front of the building is Laguna de Espejo, a large pool in which are growing all varieties of lilies and water plants found in temperate and tropical climates.

Replicas of historic gardens also adorn the grounds, one of the most picturesque of which is the Casa del Rey Moro Gardens, designed from gardens by that name in Spain and the famous Alcazar Gardens, reproduced from those in Seville by the same name. The patio in the House of Hospitality also is a reproduction of the patio in the famous Museum at Guadalajara, Mexico.

* * *

Don't Miss the Zoo

A visit to the exposition would not be complete without a visit to the world famous zoo, entrance to which is on the grounds, near Enchanted Land. Largest zoo in area in the United States, it is surpassed only by the Bronx and St. Louis zoos in number of animals.

Here are to be found the only two mountain gorillas in captivity, brought back from the Belgian Congo uplands by Mr. and Mrs. Martin Johnson. Trained animals, a new feature in zoo management, also perform in an outdoor arena every afternoon. New cages and buildings have been constructed and an expedition now is in Java and the Malay jungles, to bring back a shipment of reptiles early this summer.

* * *

World's Largest Birdcage

The largest bird cage in the world is one of the sights in the zoo. It reaches the height of a 12-story building and full-sized trees are growing inside, upon which roost the giant birds of prey—eagles, vultures, and others. So large is the cage that these giant birds have plenty of room to take off and fly continuously, thus keeping themselves in good condition.

Balboa Park, in which the exposition is held, is unique in that while beautifully developed and landscaped, it has dozens of little, out-of-the-way paths and walks where the visitor can get away from crowds and sit amid the luxuriant beauty of a natural semi-tropical jungle. Palm canyons, rustic bridges, gigantic eucalyptus groves, trailing vines, and millions of beautiful flowers abound in every corner of the vast acreage.

* * *

A Natural Setting

Setting of the exposition could not have been designed for a more exquisite scenic effect. Situated on a mesa between the sea and the mountains, the visitor can look to the West and see beautiful San Diego Bay, in which nearly always will be seen scores of warships and commercial craft riding at anchor. Across the bay is Coronado, and adjoining it North Island, where the naval air base is located. Airplane carriers at anchor nearby, flanked by cruisers, destroyers, submarines, dreadnoughts, and tenders give a graphic picture of America's naval strength, of particular interest to the inland visitor.

To the North, East, and South are mountain ranges, stretching away in the distance, their sides of rugged beauty changing hues as the sun advances in its march across the sky.

* * *

Mobile Color Lighting

The 1936 exposition has a lighting system that is as restful as it is unique, worked out by some of the outstanding lighting engineers of the country. The night effect, while brilliant, is subdued with the skillful application of mobile color, the result of which is an ever changing, yet softly blended, series of rainbow hues.

Throughout the grounds are found surprising treatments of various spots with colored lights. Every tree, shrub, fountain, flower garden, and building has been studied carefully and the result is that each is "painted" with color from concealed "spots." Dozens of banks of dimmers, used heretofore only in lighting stages, control the various effects throughout the grounds, the first time an attempt ever was made to "stage light" in a 600 acre park.

As the visitor enters the main gates at night, he is greeted by a moving wave of color, each hue blending with the one that preceded it and painting the buildings, trees, and shrubs in exotic hues. These shades change slowly so that the blending of lights is barely noticeable, yet the visitor who takes his gaze from a particular spot for a few minutes, and then returns, will likely find that it has changed color entirely.

* * *

Plenty of Accommodations

Hotels and apartment houses in San Diego are prepared to care for about 100,000 visitors, at rates ranging from $1 per day, up. Besides, there are scores of motor courts, camp grounds, and a large beach tent city, where accommodations may be found at low rates.

The housing bureau, also, has listed more than 5,000 rooms in private homes, within a reasonable distance from the exposition grounds, and these may be obtained at $1 and up per day.

Dining facilities at the exposition have been greatly enlarged since the 1935 season and four large restaurants have been built or remodeled and enlarged. Largest is the Cafe of the World, built as a replica of a Spanish courtyard, which seats 1,250 guests and which has a large coffee shop in connection.

Liquid Carbonic Corp. Promotes R. H. Crane

CHICAGO—R. H. Crane, advertising and sales promotion manager of the Liquid Carbonic Corp., has been appointed assistant general sales manager. He will continue in full charge of all sales promotion and advertising activities of the company.

George T. Jahnke has been advanced to the position of advertising manager.

Air Conditioning

Westinghouse Features Compact Cabinet & Quiet Operation in 'Golden Jubilee' Model of Mobilaire Conditioner

MANSFIELD — New engineering principles, a more compact cabinet, greater efficiency, and quiet operation are the leading sales features of the Westinghouse "Golden Jubilee" Mobilaire unit cooler for 1936, which has just been introduced.

The unit is powered by the Westinghouse hermetically sealed compressor, which requires no oiling and is sealed against dust and dirt. Operating mechanism is spring-suspended within the steel shell, to provide quiet operation. The cooling unit is also enclosed in sound-proofed, insulated walls, both for quiet operation and to prevent the heat removed from the room from mixing with the air to be recirculated.

A welded structural steel frame work supports the unit, cooling coil, and cloth duct. This duct, which is attached to the top of the coil itself, prevents dissipation of the cold air, leading it direct from the coil to the discharge duct, from which it enters the room. It is also said to aid quiet operation.

Fan is oversize and of high capacity, with overlapping aluminum blades, and is rubber-mounted to reduce noise and vibration.

The cabinet itself is finished in walnut, of compact size, and with a recessed base, just as are the models in Westinghouse's "Golden Jubilee" refrigerator line. A handy switch control, which regulates operation of the unit, is set atop the cabinet on the left-hand side. Water supply to the cooler automatically shuts off when the unit is not in operation.

A "watchman" thermostat is built into the operating mechanism, to guard the motor and compressor from damage through overheating.

Phoenix Department Store Reports Business Increase of 30% Due to Air Conditioning

PHOENIX, Ariz.—Installation of a $20,000 air-conditioning system last summer increased business approximately 30 per cent for the Boston Store, one of the city's three leading department stores, according to Superintendent Jack Kroloff.

The first department store in the city to put in a dry-cooling system, the Boston Store had a competitive advantage in drawing traffic because people preferred to buy in comfort. A competitor has now installed a similar system, but Mr. Kroloff expects this will also be an eventual benefit to his business.

"The other store's improvement may cost us a little immediate business, but it should increase sales from another standpoint," he says. "When there are two good, air-conditioned stores from which to buy, I believe people will do more shopping in the hot months. If people didn't have to swelter except when they were on the street, there'd be a lot more summer traffic in the business district."

In addition to drawing more traffic, the air-conditioning system has increased the store's sales percentage, Mr. Kroloff reports. "Because they are comfortable, customers are easily pleased. Instead of hurrying out, they 'browse around' and make unintended purchases."

Clerks, no longer fatigued by the excessive heat, are pleasanter and more courteous. Other advantages noted by Mr. Kroloff are that the store becomes a meeting place for women on shopping tours, and that exchanges and damages are fewer. Customers no longer express the desire to take the dresses home to try them on in comfortable surroundings. They try them on in the store—where it's most comfortable of all.

Taking advantage of the new system for advertising, the store last summer issued a 19-page newspaper supplement, which balanced stories of the new equipment with features of summer styles.

The system, which produces the equivalent of 125 tons of ice per day, has a 60,000 c.f.m. capacity, providing a change of air every five minutes.

Denver Public School Offers Course in Air Conditioning for Public

DENVER—Practical air-conditioning education is now available to the general public here in a course offered by Opportunity School, free adult vocational school maintained by the city.

The course has been under way since Sept. 1 and is attracting a constantly growing attendance. About 50 students are now registered. They are divided into two classes, each receiving two periods of night instruction per week.

Subject matter covered includes heating, ventilating, cooling, humidification, and dehumidification. Part of the work is done in the classroom and part in the laboratory.

In charge of the instruction is Philip Self, for some time electrical instructor at Opportunity School. Mr. Self last year won a national award for his air-conditioning research work.

History of the present permanent course dates back to last summer, when a six weeks' experimental class was offered. So much interest was shown that heads of the institution decided to make the work a regular proposition.

The free education gives men who are interested in this line, but who don't have the money to obtain paid instruction or the experience necessary for getting the benefits of commercial company training, a chance to break into their chosen field.

The course is recognized by Public Service Co. of Colorado, which is sending all of its heating salesmen to the classes.

Air Conditioning Used to Give Correct Emotional Response by Actors

HOLLYWOOD—How air conditions can be varied to produce certain desired emotional responses from movie actors was recently related by King Vidor, movie director.

"I find," he said, "that air conditioners on the set can be so manipulated as to improve the pictures.

"For instance, when characters are engaged in portraying a fight scene, or melodramatic episodes involving strife or argument, I have the studio engineers drop the temperature of the sound stage as low as 50° F. Such an atmosphere, I have found, tends to make people feel 'on edge.'

"On the other hand, the mood in which love scenes are played can be induced by a higher room temperature. The truth of this theory was recently demonstrated when, without informing the stars (Gary Cooper and Anna Sten), I ordered a temperature of over 80° F.

"This evoked a sort of 'Land of the Lotus Eaters' effect on the principals. A certain lethargy of movement was conveyed to their characterizations and produced a convincing act."

New Topeka Restaurant To Be Conditioned

TOPEKA, Kan.—Having successfully used air conditioning to bolster up business last summer, owners of the Norman Cafe here are installing a system for their new restaurant, "The Creamerie."

Capital Iron Works will begin installation immediately on a summer cycle of air conditioning, J. W. Bostwick, sales manager of that company, reports.

The street floor dining room and upstairs party rooms of the restaurant will be handled by separate Frick machines. A 20-ton Freon system is contemplated.

Minneapolis-Honeywell Reports Sales Increase

MINNEAPOLIS—A substantial increase in Minneapolis-Honeywell Regulator Co.'s business during 1935, as compared with the previous year, is reported by President H. W. Sweatt.

Expansion of the building industry, Mr. Sweatt told the field men, should furnish unusual sales possibilities in 1936.

Air-Conditioning Installations in Omaha Near Hundred Mark

OMAHA — Fifty-three installations of air-conditioning equipment were made here during the first eight months of 1935.

By July 1, 21 installations had been recorded. Twenty-nine jobs were completed during the month, three more during August.

In addition to this, $400,000 more of air conditioning is now being considered in Omaha and most of it will be contracted by the first of the year. This will mean more than 100 business buildings, hotels, and restaurants in Omaha will soon have air conditioning, says John S. Davidson, air-conditioning promotion man for the Nebraska Power Co.

Nebraska Power Co. has completed installations totaling 111,000 cu. ft. on the seventh floor, covering its offices, and a further installation caring for its offices and those of General Electric on the sixth floor, making over 133,000 cu. ft. in all.

Other installations are Union Pacific restaurant in the Union passenger depot, 63 hp. (Vilter); Holmes Recreation Parlors, 15 hp. (Carrier); Swift & Co. offices, 40 hp. (General Electric); Service Life Insurance Co. office building, 30 hp. (York).

The Dixon restaurant in the same building has installed a 25-hp. Baker Ice Machine Co. unit, while the Paxton hotel has completed an 168-hp. General Electric installation, covering three dining rooms and a large ball room, as well as the hotel's offices.

A survey made by Nebraska Power Co. on July 1 showed installations totaling 1,181 hp. during the first six months of the year. The survey also showed Omaha business houses leading Boston, Birmingham, Toledo, Akron, Oklahoma City, Dallas, Los Angeles, as well as a score of cities with virtually the same population, in installations for the period.

Largest single installation was made in the Insurance building, headquarters for the W. O. W. insurance organization.

One-fifth of the installations have been year-'round systems.

"Professional men are now demanding air-conditioned offices, and that is sooner or later going to effect a decided change in Omaha office buildings," says Mr. Davidson. "Business houses are installing complete systems because it means more customers and an increased efficiency of the help."

Thus far not more than half a score of private home have air-conditioning installations. Reason given is that systems suitable for this purpose are too expensive.

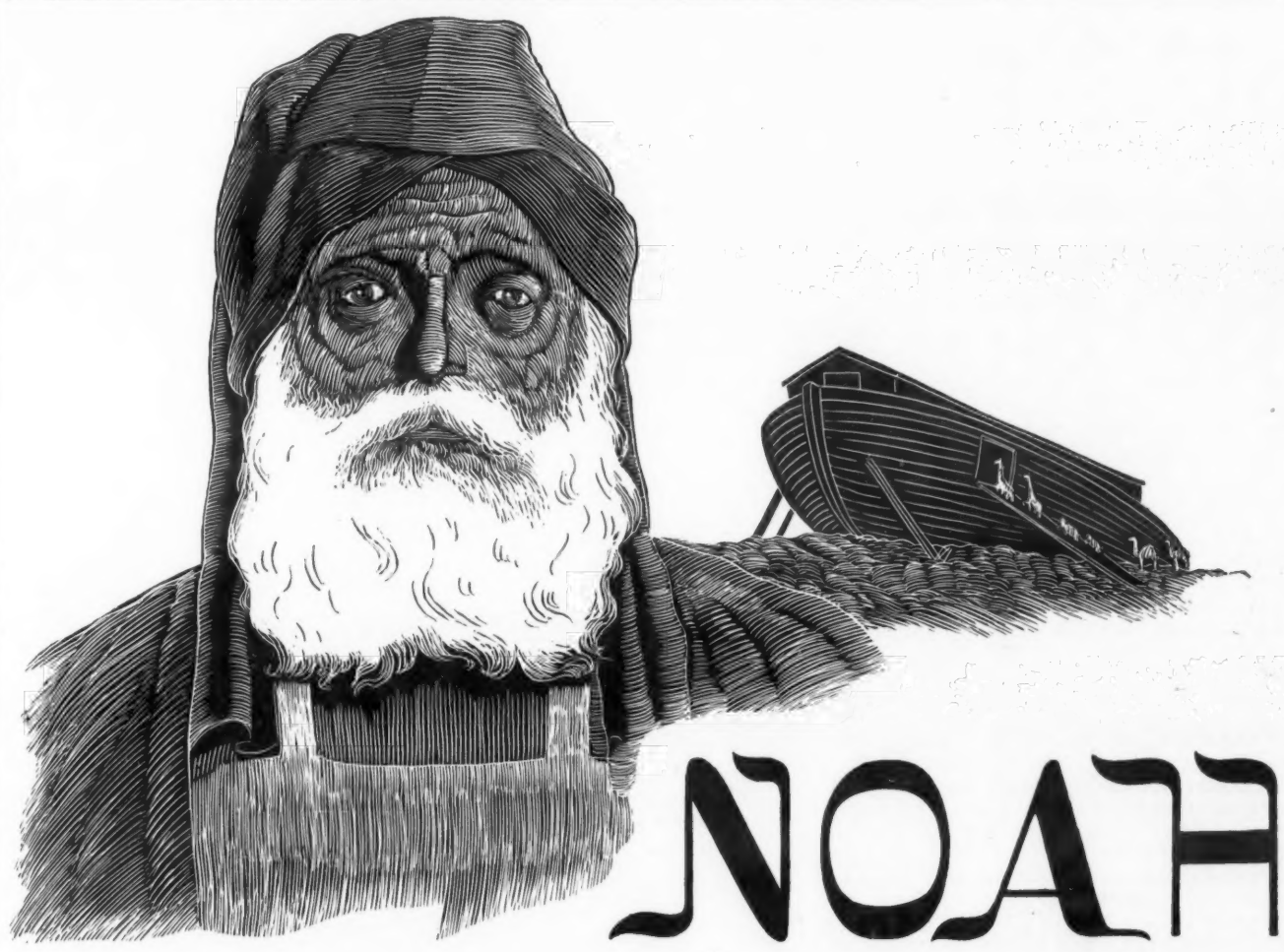
One of the latest jobs is that for the Walgreen drug store at Harney and 16th Sts. This will be the second largest drug store in Omaha. The restaurant, 60x90 ft., in the rear of the drug store, will also be air conditioned.

King Ventilating Co. Opens Sales Office in Chicago

CHICAGO—King Ventilating Co., manufacturer of ventilating and air-conditioning equipment with factory and general offices at Owatonna, Minn., has established general sales headquarters at 545 West Washington Blvd. here.

The office is in charge of F. L. Hutchinson and T. J. Rider, Jr.

The company manufactures a complete line of unit heaters, coolers, humidifiers for steam, hot water, and vapor systems, air conditioners for year-'round use, blowers, exhaust and universal fans, air intakes, louvres, penthouses, and roof ventilators.



NOAH

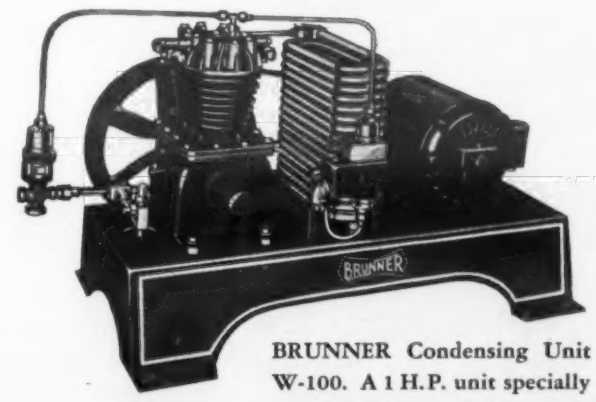
rated a Pair over 3 of a Kind

In making up the list for his nautical excursion, Noah carefully avoided all excess baggage. His sailing companions were selected on the basis of potential usefulness.

This policy of Noah's finds its counterpart in the way Brunner plans and builds refrigeration units. Ruling out all excess—avoiding bulkiness and useless weight—Brunner accomplishes what the industry is looking for: compactness . . . attention-free performance . . . economy.

There's a unit among Brunner's 8 Compressor models and 41 Condensing Units which can answer any specific set of demands you might name: from 1/6 H. P. to 15 H. P.; air and water-cooled; electric motor or gas engine driven. Complete information and specifications in the Brunner Refrigeration Catalog. Send for a copy. Brunner Manufacturing Co., Utica, N. Y., U. S. A.

BRUNNER



BRUNNER Condensing Unit W-100. A 1 H.P. unit specially suited to large display cases . . . water-cooled . . . economical.

BRUNNER

Condensing Units and Compressors

Miller Builds Colony Of Air-Conditioned Los Angeles Homes

LOS ANGELES—Creating a small colony of air-conditioned residential buildings of unusual design and construction, Miller Conditionair, Inc., air-conditioning manufacturer, is building 18 duplex houses located within a range of two blocks in the Westwood Hills section of this city.

Each building will be completely air conditioned with a Miller Conditionair system. Construction materials to be used in this new type of home, which was invented by Joseph Miller, head of the company, include aluminum, steel, glass, and concrete.

Duplexes in the group will contain 14 rooms and two garages. The garages are of a patented construction, invented by Mr. Miller, who claims them to be carbon monoxide-proof—so that a person can not be overcome by this gas while in the garage.

Other features of the new houses include an underground refuse device, a collapsible clothes drier (located in the yard), and Roman-type baths housed in rooms adjoined by an entirely enclosed patio.

Miller Conditionair, Inc., will offer these buildings, when they are completed, at prices within the common reach, declare company officials, who believe this building project to be the first step in a building program which will be national in scope.

Downtown Air-Conditioning Salesroom Opens in Boston

BOSTON—The first showroom in the shopping district here to be devoted exclusively to air conditioning, was opened recently in the Little Bldg., at 80 Boylston St., by Smith & Saunders, Inc., distributor of Corozone air-conditioning equipment.

The distributing company is a Massachusetts corporation, formed specifically to distribute the Corozone line. Abbott P. Smith II, Boston, is president and general manager, and John A. Rutherford, Winchester, Mass., is general sales manager.

Three wholesale men and 14 retail salesmen have been employed to cover the territory, which includes Massachusetts, New Hampshire, and Maine.

WHOLESALE PARTS

Our 1936 catalog lists complete wholesale supplies for commercial and household refrigeration. Write for your copy today. Indiana's complete wholesale refrigeration parts warehouse.

"Our stock today is on your job tomorrow."

F. H. LANGSENKAMP COMPANY

229 E. South St.
Indianapolis, Indiana

McCORD Refrigeration PRODUCTS

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

METLFLEX ICE TRAYS

SPIRAL FINNED TUBING

AIR CONDITIONING SURFACE

McCORD RADIATOR & MFG. CO.-DETROIT

Survey by Kansas City Air Conditioning Council Shows Where 365 Installations Have Been Made

(This tabulation of Kansas City installations was made available through the courtesy of Anson D. Marston of the Kansas City Power & Light Co.)

Bakeries—(Partial List)—(3)

Name and Address	Equipment and Installed by	Tonnage	Refrig. Hp.
*Advance Bakery, 2729 Oak	Frick—Olchoff	9	12
Manor Bakery, 4050 Penn	Baker	23	25
Schulze Baking Co., 828 E. 22nd St.	Brunswick-Kroeschell—Natkin	25	34
		57	71

Banks (3)

†Commerce Trust Co. Commerce Bldg.[1]	Frigidaire—Carter-Waters	3	3
*First National Bank, 10th & Baltimore[1]	Strang—Strang	1	1
†Morris Plan Bank, 902 Grand	G. E.—A. C. Engr. Corp.	8½	10¾
		12½	14¾

Beauty Shops (5)

†Emery Bird Thayers B. Sp., 11th & Grand	Westinghouse—Natkin	35	45
*Marie Earl Beauty Shop, 314 Ward Pky.	York—York	5	5
†Mrs. Eva O'Donnell, 4636 Mill Creek	Carrier—Gustin-Bacon	7½	8¾
*Proctor-Wayman B. Salon, 16 W. 63rd St.	Strang—Strang	4	4
*Rose Munsterman B. Shop, 4737 Troost	Starr-Freeze	3	3–1
		54½	66–1

Buildings (5)

*Federal Reserve Bldg., 10th & Grand	(Steam-Jet)	300	94
†Jackson County Courthouse, 12th & Oak	York—York	100	140
†Municipal Auditorium, 14th & Wyandotte	York—York	1,016	2,000
†Musicians Bldg. (Aud.), 1017 Washington	Ice—K. C. Ice Co.	.....	.....
†Sarachon Hooley Bldg., 4524 Main	Carbondale—Natkin	15	17
		1,431	2,251

Drug Stores (5)

*Katz Drug Co., 12th & Baltimore	Frick—Olchoff	50	60
*Katz Drug Co., 12th & Walnut	Frick—Olchoff	13	15
†Katz Drug Co., 12th & Walnut	Lipman—Natkin	30	40
†Liggett's Drug Store, 12th & Main	Frigidaire—Carter-Waters	10	12
Stockyard Drug Co., Live Stock Exchange	Frigidaire—Frigidaire	3	3
		106	130

General Offices (51)

†Dr. Harry Allshouse, Jr., 6333 Wyandotte	Thermal Units—Air Cond. Equip. Co.	3	3
†Berkowitz Envelope Co., 19th & Campbell	Chrysler—K. C. Airtemp	5	5¾
‡Betz Unit Cooler Co., 6 West Ninth St.	Lipman—Betz	3	3½
*Board of Trade Bldg. Off., Bd. of T. Bldg.	Ilg—Ilg	1½	1½
Brown & Loe Produce Co., 104 E. Fifth St.	Ice—K. C. Ice Co.	.....	.....
*Brown-Strauss Corp., Lydia & Guinotte	Carrier—Gustin-Bacon	3	3
Glenn Carter Co., 3934 Main	Frigidaire—Frigidaire	2	2
†Chapman Dairy, 1207 Locust	York—York	10	11½
*City Beverage Co., 20 Walnut	Frigidaire—Frigidaire	1½	1½
Continental Export Co., Bd. of Trade Bldg.	Frigidaire—Frigidaire	1½	1½
†Continental Export Co., Bd. of Trade Bldg.	Frigidaire—Frigidaire	3	3
The Cutino Co., 807 Wyandotte	Frigidaire—Frigidaire	1½	1½
Delico Meat Products Co., 1206 Forest	York—York	4	5
Donnelly Garment Co., 1828 Walnut	Frigidaire—Frigidaire	3	3
Eli Lilly & Co., 906 Central	Carrier—Natkin	3	3¾
*Employers Reinsurance Corp., Ins. Bldg.	Strang—Strang	1½	1½
*Faultless Starch Co., 1025 W. Eighth St.	York—York	5	6½
*Finance Credit Corp., 1300 McGee	Servel—Townley	5	5
*Frigidaire Corp., 2619 McGee[2]	Frigidaire—Frigidaire	10	13
*Gustin-Bacon Mfg. Co., 1416 W. 12th St.[2]	Carrier—Gustin-Bacon	13	14½
*Interstate Securities, City Bank Bldg.	Frigidaire—Frigidaire	1	1
†Jensen Salsberry Lab., 520 Pennway	York—York	3½	6½
†K. C. Ice Co., 2027 Campbell	Ice—K. C. Ice Co.	....	2½
†K. C. Power & Light Co., Northeast Sta.	Westinghouse—Natkin	15	22
Katz Drug Co. (Offices), 1130 Walnut	Frigidaire—Frigidaire	2	2
†Koch's Butcher Supply Co., No. Kansas City	Baker—Natkin	5	5¾
†Larabee's Flour Mills, New York Life Bldg.	Carrier—Gustin-Bacon	20	25
†Lewis Investment Co., 1301 Oak	Westinghouse—Natkin	7	9
†Liquid Carbonic, 1338 Liberty	Carrier—Gustin-Bacon	7½	9
Thomas McGee & Sons, Title & Trust Bldg.	Frigidaire—Frigidaire	2	2
*Manor Baking Co., 4050 Penn	G. E.—A. C. Engr. Corp.	35	54
*Michael-Swanson-Brady Co., 120 Walnut	Servel—Townley	3	3
*Missouri Casket Co., 1350 Woodsweather	Westinghouse—Natkin	½	½
*Moser & Suor, 2222 McGee[2]	Norge—Moser & Suor	14½	20
Palace Clothing Co. (Office), 12th & Grand	Frigidaire—Frigidaire	2	2
*Pepard Seed Co., 1101 West Eighth St.	Carrier—Gustin-Bacon	10	11½
Postal Life & Casualty, 4727 Wyandotte	Universal—A.C. Eng. Corp.	10	12
*Rust Sash & Door Co., 1410 W. 10th St.	Ice—K. C. Ice Co.	.....	.....
†Shannon-Douglass Co., Dwight Bldg.	Ilg—Ilg	2	3
†Sinclair Coal Co., 1012 Baltimore	Westinghouse—Natkin	20	28
†T. W. A. Airport, Municipal Airport	Lipman—Caldwell & Assoc.	10	10
Uhlmann Grain Co., Bd. of Trade Bldg.	Frigidaire—Frigidaire	1½	1½
†Union Finance Co., 15th & Oak	Lipman—Gen'l. Refrig.	5	5½
‡United Film Ad. Service, 2427 Charlotte	Lipman—Betz	2½	3
U. S. Cold Storage Co., 500 E. Third St.	.....—Olchoff	....	3
*Universal Institute, 2821 Indep. Ave.	Frigidaire—Frigidaire	4½	5½
†Veterans of Foreign W., Medical Arts Bldg.	Ilg—Ilg	½	½
*Washburn Crosby Milling, 3100 Guinotte	Frick—Olchoff	5	5
†Waxide Paper Co., 20th & Tracy	York—York	8	11½
*Western Auto & Supply Co., Candler Bldg.	Westinghouse—Natkin	3	3
Woolf Brothers, Inc. (Office), 1020 Walnut	Frigidaire—Frigidaire	2	2
		281½	359¼

Hospitals (9)

*Bell Memorial (Rooms), 39th & Rainbow	Frigidaire—Frigidaire	¾	1
†Lakeside (Operating Room), 29th & Flora	Strang—McNamara	1	1
*Menorah Hospital (Rooms), 4949 Rockhill	Westinghouse—Natkin	2¼	2¼
†Menorah (Rms. & Nursery), 4949 Rockhill	Westinghouse—Natkin	2	2
*Research (Rooms), 2300 Holmes	Westinghouse—Natkin	¾	¾
†Research (Rooms & Nursery), 2300 Holmes	Strang—McNamara	1⅝	2
†St. Joseph's (Nurs'y), Linwood & Prospect	Strang—McNamara	1	1
*St. Luke's (Room), 44 Mill Creek	Frigidaire—Frigidaire	½	½
†St. Luke's (Nursery), 44 Mill Creek	Strang—McNamara	1	1
		10 11/12	11½

Hotels (11)

Baltimore Hotel, 11th & Baltimore	Carrier—Carrier	50	50
*Hotel Kansas Citian (Bar), 11th & Baltimore	Ice—K. C. Ice Co.	.....	.....
*Muehlebach Hotel (Bar), 12th & Baltimore	York—York	53	125
Muehlebach (Coffee Sh.), 12th & Baltimore	Sturtevant—Natkin	15	45
Muehlebach (Grille), 12th & Baltimore	Carrier—Natkin	38	75
†Muehlebach Hotel (Rms.), 12th & Baltimore	Carrier—Gustin-Bacon	15	18
†Pickwick Hotel (Dining Rm.), 10th & McGee	Assembled by owner—Bought by owner	20	48
*Pickwick Hotel (Bar), 10th & McGee	Assembled by owner—Bought by owner	10	10
Phillips Hotel (Bar and English Grille), 12th & Baltimore	Brunswick-Kroeschell—Natkin	28	50
†President Hotel (Cof. Sh.), 14th & Baltimore	Brunswick-Kroeschell—Natkin	12	26½
Savoy Hotel, Ninth & Central	Frigidaire—Frigidaire	10	10
		251	457½

Miscellaneous

†Brush Creek Tavern, 4524 Main	(Cooled from Sarachon-Hooley Bldg.)		
†D. & S. Club, 15 West 12th St.	Baker—Copeland	18	21½
†Lido Club, 2 West 39th St.	G.E.—A.C. Engr. Corp.	7½	8¾
Stockyard Pool Hall, Stockyard Dist.	Ice	.....	.....
†Tango Club, 3144-46 Troost	Baker—Copeland	18	23
†The Bowery, 115½ West 12th St.	G.E.—A.C. Eng. Corp.	13½	16
†The Rialto, 12 East 39th St.	Frigidaire—Frigidaire	13	19
†Turfite, 1003 Walnut	Ice—Air Cond. Equip.	20	5
		90	93¼

Mortuaries (9)

†Bergman Funeral Home, 4308 Mill Creek	Ice—K. C. Ice Co.	.....	.....
†Eylar Funeral Home, 1800 Linwood	Strang—Enterprise Oil Burner Co.	18	21
†Freeman Mortuary, 104 West 42nd St.	G.E.—A.C. Engr. Corp.	8½	12
Fulton Funeral Home, 18th & Washington	Ice—K. C. Ice Co.	.....	.....
Lapetina Funeral Home, 536-38 Campbell	Ice—K. C. Ice Co.	.....	.....
*Lindsey Funeral Home, 3811 Broadway	Carrier—Gustin-Bacon	7½	9
‡D. W. Newcomer's & Sons, 46th & Paseo	Lipman—Betz	7½	7½
Rose & Henderson, 4139 East 15th St.	Ice—K. C. Ice Co.	.....	.....
Stine & McClure, 3235 Gillham	Ice—Natkin	17	3
		58½	52½

Restaurants & Night Clubs (35)

Name and Address	Equipment and Installed by	Tonnage	Refrig. Hp.
†Ambassador Grille, Ambassador Hotel	G.E.—A.C. Engr. Corp.	8½	11
†B & G Sandwich Shop, Stats Hotel	Carrier—Gustin-Bacon	15	16½
†Blue Hills Barbecue, 6007 Troost	Norge—Moser & Suor	20	24½
Bo Sing Young, 415 Alameda Rd.	G.E.—A.C. Engr. Corp.	5	5
Engleman's Cafeteria, 1105 Grand	Frick—Olchoff	40	49
Forum Cafeteria, 810 Grand	Ice—Woodling	.....	.....
†Forum Cafeteria, 1212 Main	York—York	65	99½
‡Fowler's Lunch, 1110 Baltimore	Lipman—Betz	7½	Est. 7½
Fred Harvey, Union Station	Carrier—Natkin	60	75
†Paul Hoffman Restaurant, 4526 Main	(Cooled from Sarachon-Hooley Bldg.)		
†International Tavern, 4618 Troost	Baker—Copeland	3	3¼
*Italian Gardens, 1110 Baltimore	Frigidaire—Frigidaire	13	16
Sam Kalles, 1717 West Ninth St.	(Well water)	....	22½
†Kansas City Club, 13th & Baltimore	Carrier—Gustin-Bacon	35	38¾
Keithley's Grille, 3503 Troost	Frick—Olchoff	5	7½
*King Joy Lo, 8 West 12th St.	Copeland—Copeland	4	5
*Martin's Cafeteria, 4638 Wyandotte	Frigidaire—Frigidaire	20	26
*Martin's Tavern, 20 West 63rd St.	G.E.—A.C. Engr. Corp.	15	16
*Martin's Tavern, 47th & Wyandotte	Frigidaire—Frigidaire	20	26
†Mayfair Amusement Co., 7903 Holmes	Westinghouse—Natkin	68	87½
National Restaurant, 11th & McGee	Ice	.....	.....
*Plaza Royale, 612 West 49th St.	Norge—Moser & Suor	13½	16
*Price Candy Co., 1000 Walnut	Carrier—Gustin-Bacon	40	43½
†Price's, 39th & Main	Carrier—Gustin-Bacon	35	35
*Pusateri's, 1217 Baltimore	Norge—Moser & Suor	25	28
*Reel Cafe, 108 West 18th St.	Ice	.....	.....
*Southern Mansions, 1423 Baltimore	Norge—Moser & Suor	20	23
*Speyer's Grille, 1934 Grand	Copeland—Copeland	4	6
†Terminal Ry. Co. Rest., Union Station	Carrier—Gustin-Bacon	7½	1½
Thompson Restaurant, 15 West 12th St.	Ice—Woodling	.....	.....
*University Club, 918 Baltimore	Carrier—Gustin-Bacon	15	16½
*Walker's Lunch, 3108A Troost	Frigidaire—Frigidaire	7½	7½
†Walker's Lunch, 3912 Main	Frigidaire—Frigidaire	10	12
Wolferman's Grillette, 11th & Walnut	York—York	25	25
†Wolferman's, Inc., 11th & Walnut	York—York	60	93½
		666½	844

Sales Rooms & Shops (33)

†Air Cond. Engr. Corp., 440 Ward Pky.[3]	G.E.—A.C. Engr. Corp.	3	3½
*Chandler's Shoe Store, 15 East 11th St.	Brunner—Betz	7½	8¼
*Chasnoff's, 1018 Walnut	Frigidaire—Frigidaire	7½	9½
†Chasnoff's, 1018 Walnut	Frigidaire—Frigidaire	2½	2½
†Deutsch's Dress Shop, 220 West 47th St.	Westinghouse—Natkin	6	8½
A. Diamant, 1205 Walnut	Carrier—Natkin	5	6
*Florsheim Shoe Co., 1009 Main	Carrier—Gustin-Bacon	3	3
‡General Refrigeration Sales, 1931 Main	Lipman—Betz	3	3
†Grayson's Shops, Inc., 1120 Walnut	Carbondale—Natkin	10	11½
Grimme Shops, Inc., Bryant Bldg.	Frigidaire—Frigidaire	6	6
Helzberg's Jewelry Co., 1100 Walnut	Brunswick-Kroeschell—Natkin	10	13
*Jack Henry, Inc., 4700 Wyandotte	(Cooled from Plaza Theater Lobby)		
†Jaccard Jewelry Corp., 1017 Walnut	Carrier—Gustin-Bacon	15	17
K. C. Gas Co. (Incl. Offices), Plaza Office	Carrier—Natkin	6	5
K. C. Power & Lt. Co., 14th & Baltimore[3]	York—York	180	250
‡K. C. Power & Light Co., Plaza Office[3]	Lipman—Betz	12	20
†Katz Millinery, 1126 Walnut	Westinghouse—Natkin	7	7½
†Lerner's, 1104 Walnut	Carrier—Carrier	40	51½
†Miller-Wohl Co., 1124 Walnut	Westinghouse—Natkin	40	67½
†Oppenstein's, 1105 Walnut	Chrysler—K. C. Airtemp	20	23
‡*Page Dress Shop, 11 East 11th St.	Lipman—Betz	3	3
*Palace Clothing Co. (Base.), 12th & Grand	Westinghouse—Natkin	22	25
*Robinson's Shoe Store, 1016 Main	Frick—Olchoff	30	33
*Rubin's, 1004 Walnut	Servel—Townley	10	13
*Bennett Schneider, 213 West 47th St.	Frigidaire—Frigidaire	1½	1½
†Schoenhard's Shop, 221 West 47th St.	Carrier—Gustin-Bacon	4	4
†Stover's Bungalow Candies, 1101 Walnut	Brunner—Betz	2½	3
*Stover's Bung'w No. 30, 63rd & Wyandotte	Strang—Strang	1½	1¼
†John Taylor's (Fitting Room.), 1040 Main	Carrier—Gustin-Bacon	7½	8¾
*Van-Dyke Fur Co., 1105 McGee	Westinghouse—Natkin	4½	4½
†Wm. Volker Furn. Co., Second & Main[3]	Servel—Townley	20	22
†Woolf Bros. (Fitting Room.), 1022 Walnut	Norge—Moser & Suor	7½	7½
†F. W. Woolworth Dime Store, 1105 Main	York—York	150	225
		647½	868

Theaters (23)

‡†Bagdad Theater, 2711 Troost	Lipman—Betz	20	45
*Down Town Theater, 221 East 12th St.	(Cooled from Tower Theater)		
*Gillis Theater, 506 Walnut	Ice—Woodling	.....	.....
‡Isis Theater, 31st & Troost	Lipman—Betz	30	40
Liberty Theater, 1104 Main	Brunswick-Kroeschell—Natkin	50	100
Lincoln Theater, 18th & Tracy	Ice	.....	.....
‡Lindbergh Theater, 4011 Troost	Lipman-Betz	25	40
‡Madrid Theater, 38th & Main	York—Bought by owner	20	25
Mainstreet Theater, 14th & Main		160	250
Midland Theater, 13th & Main	Carbondale—Woodling	300	500
Newman Theater, 1118 Main		80	150
Plaza Theater, 47th & Wyandotte	Brunswick-Kroeschell—Natkin	100	200
‡Regent Theater, 109 East 12th St.	.....—Betz	25	Est. 30
Ritz Theater, 12th & College	Ice	.....	.....
‡Rockhill Theater, 46th & Troost	Lipman—Betz	30	40
Southtown Theater, 56th & Troost	Ice	.....	.....
Tenth Street Theater, 10th & Central	Ice	.....	.....
Tower Theater, 12th & McGee	Worthington—Worthington	125	175
Uptown Theater, 3700 Broadway	Amer. Carbonic	150	200
†Vista Theater, 2613 Inden. Ave.	Ice—K. C. Ice Co.	.....	.....
Waldo Theater, 75th & Washington	Ice—Woodling	.....	.....
Warwick Theater, 3927 Main	York—York	60	75
Westport Theater, 1307½ Westport	Ice	.....	.....
		1,175	1,870

Private Offices (32)

Private Offices / Manufacturer	Prior to 1934 No.	Tons	Hp.	1934 No.	Tons	Hp.	1935 No.	Tons	Hp.
Carrier (Natkin)	4	6	6½	..	..	..	..	..	..
Copeland	..	..	..	..	..	..	1	1	1
Frigidaire	3	6	6	6	6½	6½	..	..	..
General Electric	..	..	..	2	1	1	..	..	..
Ilg	..	..	..	1	2	2	..	..	..
Strang	..	..	..	3	4	4	..	..	..
Strang (McNamara)	..	..	..	..	..	..	6	7⅛	7½
Westinghouse	..	..	..	3	2¼	2¼	3	1½	1½
Totals	7	12	12½	15	15¾	15¾	10	9⅔	10
Total for All Years							32	37½	38¼

Residences (133)

Residences / Manufacturer	Prior to 1934 No.	Tons	Hp.	1934 No.	Tons	Hp.	1935 No.	Tons	Hp.
Baker	..	..	..	..	..	..	1	6	6
Carrier (Gustin-Bacon)	..	..	..	3	12	12	2	12½	15½
Carrier (Natkin)	4	8	8	..	..	..	..	..	..
Chrysler	..	..	..	..	..	..	1	3	3½
Copeland	..	..	..	..	..	..	2	1	5
Frick	..	..	..	2	8	8	..	..	..
Frigidaire (Carter-Waters)	..	..	..	..	..	..	6	6⅛	7½
Frigidaire (Frigidaire)	20	36½	36½	17	25	25	9	13⅛	15¼
General Electric	..	..	..	13	58	59	4	22½	25½
Ice	1	..	..	..	..	..	..	..	..
Miscellaneous	2	3	3	3	8½	8½	1	3	3
Norge	..	..	..	1	7½	7½	4	22½	23
Servel	..	..	..	1	1½	1½	..	..	..
Strang	..	..	..	14	14	14	..	..	..
Strang (Enterprise)	..	..	..	..	..	..	1	1	1
Westinghouse	..	..	..	13	13	15½	5	9	12
York	..	..	..	1	5	6	2	6	6
Totals	27	47½	47½	68	152½	157	38	105¾	123¼
Total for All Years							133	305¾	327¾

Grand Total ..... 365 Installations 5,185⅛ Tons 7,454-5/6 Hp.

*1934 Installations.
†1935 Installations.
‡Storage Systems.
[1]Private Offices.
[2]Including Sales Floor.
[3]Including Offices.

Installers of Air Conditioning Units In Kansas City in 1935

Make of Installation and Representative	No. of Installations	Tonnage	Horse power
Baker (Copeland of Kansas City)	5	50	58
Carbondale (Natkin)	2	25	28½
Carrier (Carrier)	1	40	51½
Carrier (Gustin-Bacon)	13	181½	197¾
Chrysler (Kansas City Airtemp Corp.)	3	28	32¼
Copeland (Copeland of Kansas City)	3	2	6
Frigidaire (Carter-Waters)	8	19⅛	22½
Frigidaire (Frigidaire)	13	41⅜	51¾
General Electric (Air Cond. Engr. Corp.)	10	72	87½
Ice (Kansas City Ice Co.)	5	20	7½
Ilg (Ilg)	2	2½	3½
Lipman (General Refrigeration Sales)	4	65	100½
Miscellaneous	5	40½	83½
Norge (Moser & Suor)	6	50	55
Servel (Townley)	1	20	22
Strang (McNamara)	10	11-5/6	12½
Strang (Enterprise)	2	19	22
Westinghouse (Natkin)	17	210½	290½
York (York)	10	1,418½	2,593½
Totals	**120**	**2,317¼**	**3,726¼**

1935 Kansas City Installations Show Slight Decrease; Local Council Is Active with Cooperative Promotion Plans

KANSAS CITY—In spite of a decrease of 24 in the number of Kansas City installations in 1935 as compared with 1934, local dealers and power company officials regard the past year with its 120 installations of air-conditioning equipment as one in which "satisfactory progress" has been made.

In horsepower, 1935's 120 installations ring up a total of 3,727¾ hp., as opposed to 1,009 hp. for the 144 systems installed in 1934. Subtracting from the 1935 total the 2,000-hp. system which represents the installation of the new municipal auditorium in Kansas City, last year's total still shows a favorable comparison with 1934, according to the tabulation made by Anson D. Marston of the air-conditioning division of the Kansas City Power & Light Co.

With the 48 installations prior to 1933, and the 53 in 1933, and the sum of the two succeeding years, the city's total is brought to 365 installations with a power load of 7,454¾ hp.

General offices still take the lead in the field with 51 installations, in spite of a sales drop to 17 in 1935, which is one under the 18 sold the previous year. Restaurants and night clubs, sales rooms and shops, all the most apparent prospects, follow in numerical importance.

With the exception of the general buildings, helped along by the municipal auditorium, theaters account for the most load, but have added only two new installations in 1935.

In spite of the reputed trend toward small business as buyers, in Kansas City, beauty shops, natural clients for cooling systems, are credited with only two new systems last year, and only one more than that in 1934; and drug stores, supposedly a fertile market, also show only two additions to the ranks of the air conditioned.

Sales rooms and shops, however, are responding according to expectations, showing the most encouraging group increase with 15 in 1935, to be compared with 11 in 1934. In this category, dress, lingerie, and hat shops as well as candy stores, all stressed as important markets, are included.

Banks show a two to one increase; buildings four to one; mortuaries three to one; and the miscellaneous group takes the lead with a seven to one increase in 1935 over the preceding year.

Hospitals, also an important field, indicate a slight improvement with five installations as compared with four in 1934.

Hotels, however, display a disappointing evenness with three installations, just equalling the 1934 total, with an even lower load.

In Kansas City an Air Conditioning Council promotes the industry, having as underwriting members the manufacturers' representatives doing most of the business.

An educational publication, the "Air Conditioner," is published by this council and mailed nine times yearly to a list of 3,000 prospects. It explains what air conditioning is, and has pictures and stories on typical installations.

Standards for approved air conditioning have also been developed and members of the council design their installations in accordance with these standards.

With their bids, the dealers enclose a uniform summary sheet which helps the prospect analyze the proposal.

Installations which meet with the approval of the council result in a letter from the council expressing this approval.

Form of the uniform summary sheet is shown below:

* * *

Uniform Summary Sheet Employed by the Air Conditioning Council of Kansas City

This standardized form is approved by the Air Conditioning Council of Kansas City, and is submitted to assist you in analyzing proposals for your installation.

The Air Conditioning Council of Kansas City consists of most of the leading manufacturers and distributors of air-conditioning equipment in this territory, as well as the ice, gas, and electric utilities.

Prospect ..... Address .....

Submitted by..... Date.....

1. **Estimate Includes:** Winter ( ), Summer ( ) air conditioning
2. **Design Conditions:**

   Winter—Inside 70° F., 30 per cent relative humidity; outside -10° F.

   Summer—Outside, 100° F., 75° F. wet bulb.
   Inside, 80° F. dry bulb, 67° F. wet bulb (50 per cent relative humidity).

   Condensing water temperature **85° F.**

   Variation from standard .....
   (These are generally recognized as standard conditions for design in the Kansas City area.)
3. **Load Data:** Net conditioned area ..... sq. ft. Volume ..... cu. ft.

   Occupancy ..... people. Lights figured ..... watts.

   Other appliances .....

   ..... Total load .....B.t.u./Hr.

   Are you reducing load by insulating or otherwise?.....
4. **Compressors:** No. ..... Hp. ..... (gas-electric) Type ..... No. cyl. .....

   Bore & stroke ..... R.p.m. ..... Suction & discharge temperatures.....

   Watts input ..... Gas .....cu. ft./hr. Water consumption .....g.p.m.

   Rated capacity .....B.t.u./hr.
5. **Ice:** with (washer) (coil). Tank size ..... Pump .....g.p.m.

   Final water temperature .....° F. Ice melting rate per hour.....lbs.

   Estimated tons per season .....
6. **Fans:** Hp. ..... Total circulation .....c.f.m. Outside air .....c.f.m.
7. **Accessories:** Controls (specify) .....

   Filters ..... Cooling Tower? ..... Type ..... G.p.m. .....

   Heating equipment? ..... Type ..... Humidification? .....

   Type ..... Washer ..... Pump hp. .....
8. Wiring by ..... Plumbing by .....

   Miscellaneous by (itemize) .....
9. This (will) (will not) meet the requirements for approval by the Air Conditioning Council of Kansas City.

Winter and Summer Conditioning Lines Added by Nelson

MOLINE, Ill. — Herman Nelson Corp., manufacturer of heating and ventilating equipment, has recently brought out two new products for the air-conditioning field—an oil-burning, air-conditioning furnace unit, and a self-contained summer air-conditioning unit.

The furnace unit is designed to provide heating air motion, humidification, and air cleaning, with optional cooling and dehumidification. B.t.u. capacity of the unit is 150,000, and air capacity is 1,500-2,000 c.f.m. The summer conditioner cools, circulates, and dehumidifies the air. It has a heat-absorption capacity of 8,000 B.t.u.'s per hour, an air capacity of 425 c.f.m., and dehumidification capacity of about 2½ lbs. per hour.

Hart Co. Gets Order for 100 Conditioning Units

UNION CITY, N. J.—Contracts to supply 100 oil-burning air-conditioning units for one concern heads the list of reasons for an optimistic business outlook for Hart Air Conditioning and Engineering Co., of this city, for the current year.

The 100 units will give automatic heat, air circulation, humidification, air filtration, and summer comfort to Reis homes in Tenafly, N. J.

The Hart concern has also contracted to install air-conditioning units in buildings under construction for Fairidge Homes, Inc., Wedgewood Homes, Inc., Parkway Estates, Inc., Galilee Development Corp., Sango Homes, Inc., and Feature Homes, Inc., all at Teaneck, N. J., and River Park Homes at Paterson, N. J.

Illinois Medical School Research Studies Effect of Air Conditioning on Health

CHICAGO—Just what effect, if any, air conditioning has on health is the information being sought in a series of experiments and tests being conducted this fall by the College of Medicine of the University of Illinois in cooperation with the American Society of Heating and Ventilating Engineers, according to a report published in a recent University of Illinois bulletin.

Because the University has, for several years, been using an eight-bed ward in its Research Hospital, in which there is complete control of atmospheric conditions for the study of hay fever and pollen asthma, the laboratory was at once available for the work just started. The research will cover not only the relation of air conditioning to health of the normal individual but also what the factors set up by air conditioning provide in the treatment of certain physical disorders.

Dr. Robert W. Keeton, who is directing the study for the University, explains that it is proposed to study a group of normal individuals under four different types of climate:

1. Cool dry atmosphere—temp. 70-72, humidity 30 per cent.
2. Cool, moist atmosphere—temp. 70-72, humidity 60 per cent.
3. Hot dry atmosphere—temp. 92-96, humidity 20-30 per cent.
4. Hot moist atmosphere—temp. 92-96, humidity 60 per cent upward.

"This study will concern primarily the efficiency of the circulation," he said. "The elimination of heat is a major problem with the body. As soon as this is made difficult, there is some form of circulatory adjustment. It is obvious that climate No. 4 would throw the maximal stress on the body. It is probable that the study of circulation alone will occupy our attention for a long time.

"There are many functions that can be studied under the same atmospheric changes, including mental efficiency tests, appetite and gastro-intestinal behavior, and other bodily functions.

"We will, of course, be examining at the same time patients with various circulatory disorders," he said. "Patients with failing or decompensating hearts, with high blood pressure, with cardiac neuroses, and toxic goiter, will be profoundly influenced by atmospheric changes.

"In some cases the atmospheric change may mean a difference between life and death. Thus a patient with exopthalmic goiter may be eliminating 75 per cent more heat than a normal person of the same size. As one sees him in the ward his skin is apt to be moist and if the day is hot then he will be actively sweating. At times the toxic goiter patient's ability to eliminate heat breaks down and his body temperature rises, values 105° or 106° F. being attained. It is then customary to surround him with ice bags or even pack him in crushed ice.

"In heart cases the ability of the skin to eliminate heat is often impaired by accumulations of edema. This throws the major portion of heat dissipation on the sweating mechanism and on the lungs."

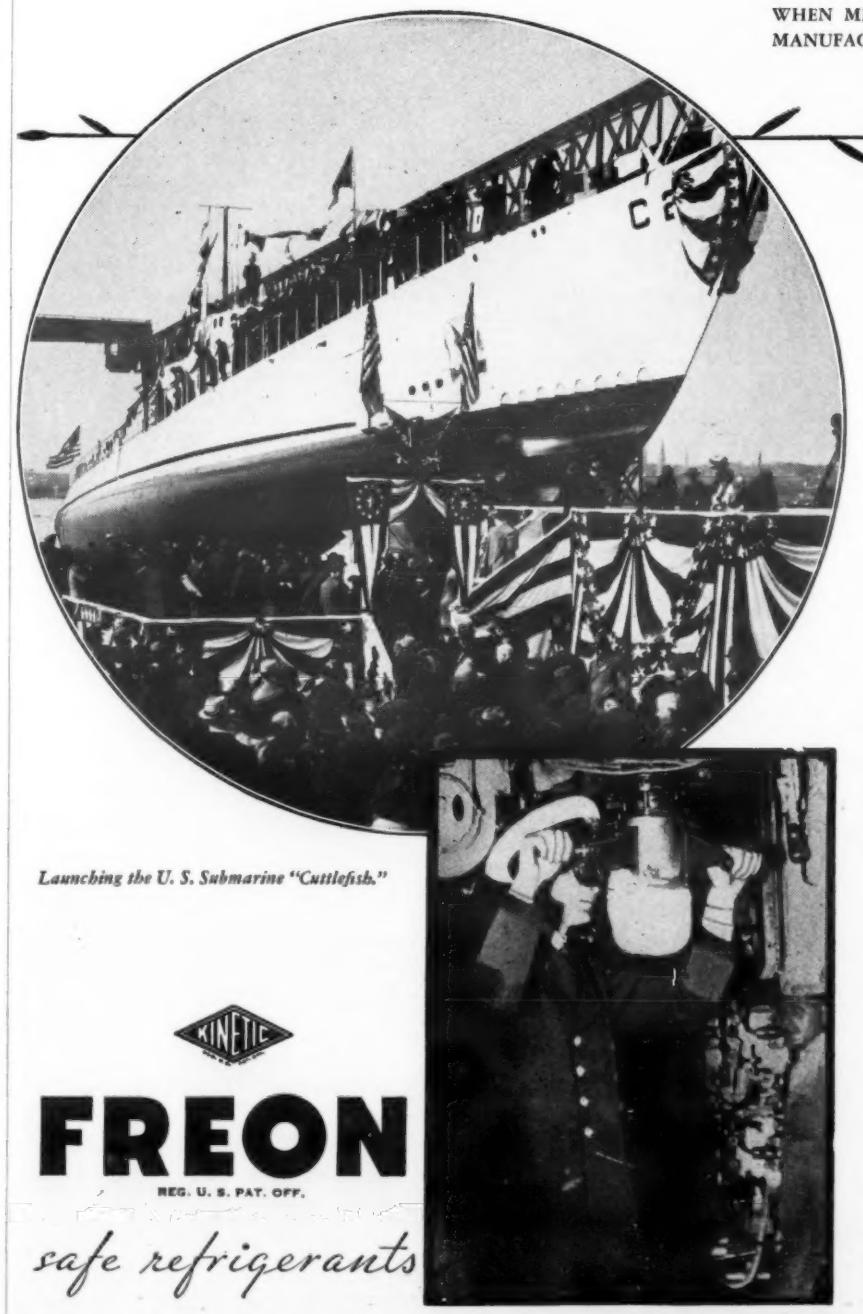
G-E Cools Barber Towels

NEW YORK CITY—New use for commercial refrigeration equipment is that employed in the DeZemler Barber shop in Rockefeller Center, where a special towel cooling cabinet is operated by a G-E CM-4A unit.

Where human life requires extra protection...

"FREON" IS USED!

WHEN MEN LIVE, WORK, FIGHT UNDER THE SEA, IN MANUFACTURED AIR, THAT AIR MUST BE KEPT PURE!



Launching the U. S. Submarine "Cuttlefish."

YOU can't afford to take chances in a submarine. The refrigerant used for air-conditioning and for food refrigeration must be *safe*. It must be non-poisonous, odorless, non-flammable. It must not explode or decompose if it comes in contact with the electric stoves in the galley. It must not destroy or impair the activity of the chemicals which purify the air.

That is why so many submarines use "Freon" for cooling and refrigeration.

Human life and health deserve maximum protection under any circumstances. Over 99% of mechanically cooled railroad trains use "Freon" to provide that protection. "Freon" is used in homes and offices, in schools, hospitals, theatres, in mines deep under the earth, in ships, museums, funeral parlors. Over 7,000 tons of "Freon" cooling is contained in government buildings in Washington, and it is estimated that another 3,000 tons will be added this year. One manufacturer alone has installed over 50,000 tons of "Freon" cooling.

"Freon" is harmless to foods, fruits, furs, clothes or flowers. It has been tested by the U. S. Bureau of Mines. It meets all the specifications set by the Underwriters' Laboratories of Chicago in their recent report "Standard for Commercial Refrigerating Systems" (Subject No. 207). For safety of life and goods—for efficient air-cooling—specify "Freon."

KINETIC

FREON

REG. U. S. PAT. OFF.

safe refrigerants

KINETIC CHEMICALS, INC., TENTH & MARKET STREETS, WILMINGTON, DELAWARE

Air Conditioning

Bearings Assembled & Inspected in Air Conditioned Rooms to Avoid Changes In Temperature & Humidity

By James J. Murray

DETROIT—That air conditioning plays an important part in precision manufacturing is demonstrated in the final assembly and inspection operations at the Bower Roller Bearing Co. plant here.

Bearings that are held to close tolerances during machining operations are now fully protected from unnecessary temperature changes, excessive humidity, and dirt while being assembled and inspected before shipment.

The air-conditioning system for the assembly and inspection departments was designed by Albert Kahn, Detroit architects and engineers, and installed by American Refrigerating Co.

It consists of a central system with distribution ducts, supplemented with direct radiation heating. Fan, filter, and coils are installed on the mezzanine floor while the refrigeration compressor is on the first floor in the adjacent shipping room.

Conditioned air is delivered at low velocity through Celotex-insulated, overhead, sheet-metal ducts containing the necessary diffuser outlets as well as volume dampers.

Air Returns Through Tunnel

Recirculated air is returned to the fan room through a masonry tunnel below main floor level and equipped at regular intervals with subway grille intakes.

The return air riser from the tunnel to the mezzanine floor is also insulated and contains a modulating motor-driven louvre, actuated from a switch in the fan room and designed to assume positions of *closed, one-fourth open, one-half open,* and *full open.*

Fresh air is admitted through a set of rain louvres in the outside wall on the mezzanine floor level directly to the head end of the conditioning housing (see Fig. 1). The fresh air volume is controlled by two independent hand-operated louvres adjusted with quadrants and levers.

The ventilating equipment comprises a Clarage fan, V-belt drive, two-speed (one-half and full) Reliance motor and automatic starter with push buttons. Fan capacity is 15,000 c.f.m. at full speed and 7,500 c.f.m. at half speed.

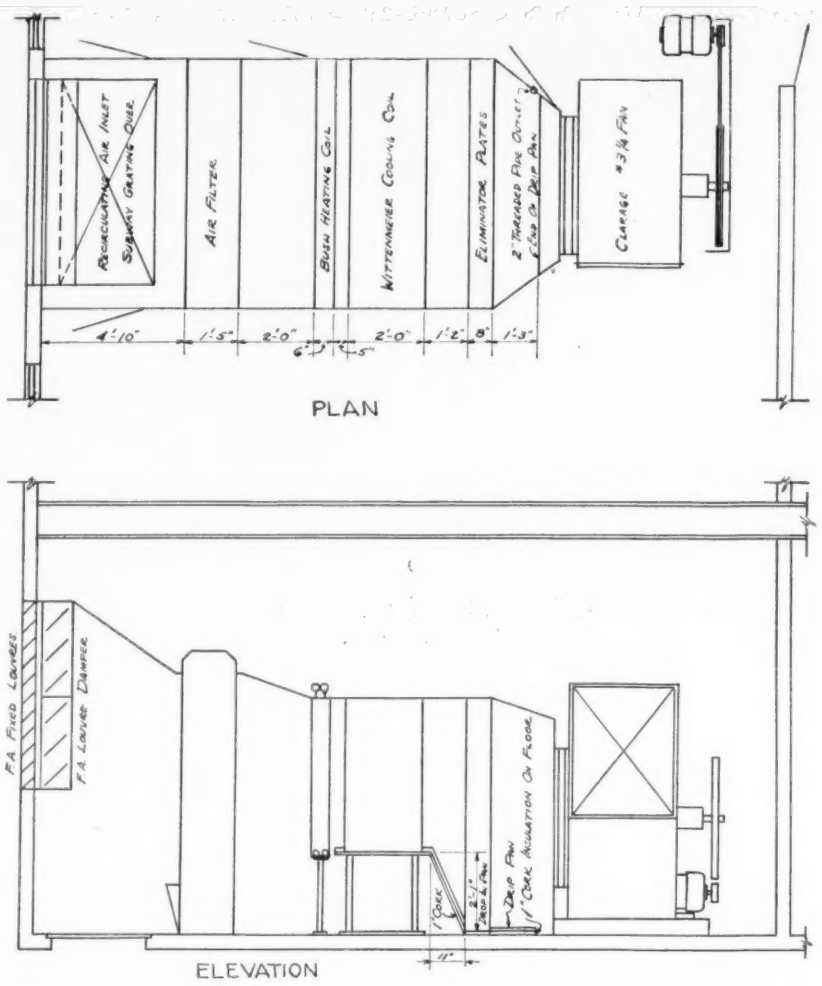
Self-Cleaning Filters Used

Air cleaning is done with American Air Filter Co.'s automatic self-cleaning filter, rotated through a worm gear speed reducer and actuated by an electric time clock. The filter is so located that both fresh air and recirculated air must pass through the filter before reaching the fan.

A fin-type heating coil, directly behind the filter, is used during seasons when heating is necessary. This two-row coil occupies the full width of the housing and is divided into two sections in the direction of air flow.

The first section is controlled by a hand-operated valve and acts as a tempering coil, being used to prevent freezing in cold weather. The second section of the coil is equipped with a modulating motor valve actuated by a thermostat in the conditioned space. Both coils operate on 2 lbs. steam pressure.

Layout of System in Roller Bearing Plant



These two drawings demonstrate the arrangement of the various parts of the air-conditioning system which Mr. Murray describes in article at left.

Installed between the heating coils and the fan intake are six sections of galvanized fin cooling coils, complete with stands, expansion valves, suction pressure gauge, suction shut-off valves, oil purge cocks, headers, eliminator plates for removing entrained moisture, and insulated drip pan and drain line. Liquid and suction lines are run from the compressor on the floor below.

The cooling equipment consists of a carbon dioxide refrigerating plant with a maximum capacity of 45 tons, and with the existing direct-expansion coil of 30-tons capacity, allows for the installation of an additional 15 tons of conditioning in a future building.

The plant is comprised of a Wittenmeier horizontal, double-acting compressor, Wittenmeier multi-shell and tube condenser, water-cooled receiver, V-belt drive, motor, automatic push-button starter, and condenser water piping. Operating gauges for water pressure and CO_2 suction and discharge pressures are all mounted on a convenient slate panel.

An interesting feature of this compressor is a clearance pocket in the cylinder head which permits a change in piston displacement to maintain suction pressure in the face of a diminishing load. By simply varying the displacement according to the load, the efficiency of the plant may be maintained near its peak value without changing the expansion-valve settings, which are adjusted to care for maximum load.

The system is so arranged that when outside conditions are ideal, 100 per cent outside air is handled.

As the outside temperature rises, the amount of fresh air admitted is decreased and more air is recirculated. At peak cooling load only enough outside air is admitted to prevent stuffiness.

The same procedure is followed during the heating season, the amount of outside air handled decreasing with the temperature. In this way operating costs are reduced to a minimum.

M-H Plans Campaign Of Advertising on Air Conditioning

MINNEAPOLIS—Thirty-two million individual advertising impressions will be directed toward consumers, large space operators, and industry this year by the Minneapolis-Honeywell Regulator Co. in an effort to create a greater interest in automatic heating and air conditioning, declares George B. Benton, advertising manager.

Starting in January with page and two-column copy in *Time, Collier's, American Home, Nation's Business,* and *Business Week,* the company initiated the campaign under the general theme: "Be modern—install automatic heating and air conditioning."

Health and economy are the main points stressed under this campaign, which will continue through January, February, March, and April, to be followed by a campaign to sell the public on air conditioning, under the general theme of "Air conditioning is knocking at your door."

Health and comfort will be played up for the home owner; increased patronage for hotel, apartment, or theater owners; and improvement in plant processing and employee efficiency for the factory owner. March, April, June, and July will see these advertisements.

To stimulate fall business and increase oil burner, gas burner, and stoker sales, the urgency of "Installing automatic heating now," will be stressed in August, Mr. Benton says.

Emphasis, at this time, in the air-conditioning advertisements will be shifted to winter humidification in *Saturday Evening Post, Time,* and other national magazines.

In connection with the campaign, a booklet entitled, "This Thing Called Automatic Heating and Air Conditioning," has been published by the company. It contains a general discussion in laymen's language of the essentials of automatic heating and air conditioning, and is designed, according to Mr. Benton, to clear up many of the misunderstandings and misconceptions which are still current, especially about air conditioning.

Cole & Blanchard Named Corozone Distributors In N. Y., Washington

CLEVELAND—Corozone Air Conditioning Corp. has appointed as distributor R. S. Cole of New York City and Walter M. Ballard of Washington, D. C.

Mr. Cole was formerly vice president and district sales manager for Hupmobile. His territory includes the western part of New England, New York, and northern New Jersey.

Mr. Ballard, an architect, will distribute both domestic and commercial air-conditioning equipment.

The Corozone line includes portable air conditioners and partial conditioners for winter and summer use. The various models may or may not include the Corozone Ionizer.

Books

Controlled Humidity In Industry

Author: M. C. Marsh, Ph. D., Wool Industries Research Association, Leeds, England. Publisher: J. B. Lippincott Co., Philadelphia. Pages: 120. Price: $2.50. Review by T. T. Quinn.

THIS book, purpose of which is to review the question of the control of humidity under industrial conditions, and the principles of the instruments and plants used for the purpose, will be found of service to manufacturers, engineers, and research workers who want to know what has been accomplished in the variation and control of humidity in England's textile and other industries, and who want to keep abreast of recent advances in the technology of air conditioning on the continent.

The importance of air conditioning to the textile industries needs no emphasis, but it may not generally be realized that it has an interest also for those concerned with the maturing of tobacco, the manufacture of chocolates and of photographic films, and the preservation of museum specimens, to mention only a few applications.

With these examples in mind, says Dr. Marsh, it is hard to think of an industry which is completely independent of humidity conditions. Even in the iron industry it has been found worthwhile to dry the air supplied to blast furnaces. It should, therefore, be a matter of considerable interest to every manufacturer to inquire whether there is any point in his process where the control of humidity would be an advantage.

After considering the importance of humidity in almost every type of industry, Dr. Marsh considers the fundamentals of humidity which are of industrial importance. Here he discusses relative and absolute humidity, wet- and dry-bulb temperature, dew point, effective and equivalent temperatures.

Chapter III of the volume takes up industrial methods of measuring relative humidity. Wet- and dry-bulb thermometers of the mercury-in-glass type, ventilated mercury-in-glass, mercury-in-steel, bi-metallic, and the electrical resistance type are considered in this classification.

Hygroscopic methods, dew point, and other methods, such as the A. E. G.-Muirhead "Ranarex" gravitometer, and the Fagelston continuous gas indicator, are touched upon, as well as related instruments like the katathermometer, the eupatheoscope, and the "rate of drying" meter.

Methods of increasing humidity are classified into four divisions: simple spray type, which gives a fine spray of water from a specially designed jet; enclosed spray type, in which water is inside a casing and induces a flow of air through the apparatus; simple ventilating or plenum type, which consists of a spray-producing mechanism through which air is driven by a fan, with distribution usually by a trunking system; and central station or air-conditioning type, which involves a large air-washing chamber followed by spray eliminators. These deliver to a room air, heated if necessary, which has been saturated at a definite temperature. As this type of plant has other applications besides humidification, it is described in a separate chapter later.

Methods of decreasing humidity, too large a subject to be covered in detail in this small volume, are divided by the author into these classifications:

Heating the air, thus lowering the relative humidity; absorption of the water by a hygroscopic substance, which is rejected when exhausted; absorption of the water by a substance which can be regenerated for further use; and air-conditioning methods which involve cooling the air so that it loses moisture, and then reheating to the desired temperature.

A chapter of the book is devoted to central station or air-conditioning plants, and some systems are described, with the notation that such installations are adaptable for either humidification or dehumidification demands.

Automatic humidity controls, says the author, permit the full advantage of humidification or dehumidification systems to be obtained. Laboratory methods, such as the dew point plate and the change in weight of a hygroscopic substance, are first described, after which the following commonly-used controls are treated:

"Arca" regulators, Baldwin controls, Brecknell, Munro & Rogers controls, Cambridge controls, Drayton regulators, Foxboro controls, Negretti and Zambra controls, "Park Spray" psychrostat, "Services" control, Short and Mason Hygrostat, Siemens control, Andrew control, and "Aerozon" control.

Patents No. 2,025,973 1,850,049

NON-POROUS • VIBRATION PROOF • LEAKPROOF • SAFE WITH ANY REFRIGERANT • FOR EVERY AIR CONDITIONING REQUIREMENT

ARCO "COPPER TO COPPER"

produces non-porous piping for refrigeration and air conditioning

THE qualities of Arco copper seem made to order for modern refrigeration requirements. Check them off: non-porous, corrosion resisting, smooth inner walls, easily handled, self insulating, safe with any refrigerant. These qualities run through the *complete* installation.

Like the pipe they join, the fittings are pure wrought copper; non-porous, corrosion resisting, full-flow, with no place for sediment to gather. Pipe and fitting react alike to every physical and chemical condition. The Arco copper to copper connection is proof against vibration, strain and pressure — quicker to make and easier to unmake, with less applied heat necessary.

The line is complete from ¼" to 4". First cost is moderate, and greater serviceable life of Arco Copper makes it still cheaper. Many plants and manufacturers have adopted Arco Copper as standard for original and replacement equipment and installations. You will, too, when you learn the facts. Write today.

Arco Pipe and Fittings Division
AMERICAN RADIATOR COMPANY
Division of American Radiator & Standard Sanitary Corporation
40 West 40th Street, New York, N. Y.

ARCO Full Flow
WROUGHT COPPER FITTINGS AND WROUGHT COPPER PIPE

COPPER TO COPPER MAKES THE FOOLPROOF JOINT
ARCO
PAT. END
The new 1-piece wrought tee with reduction on the run and on the branch.

FILTRINE
WATER COOLERS
STORAGE • SHELL & TUBE
BROOKLYN, N. Y.

LARKIN COILS
Always LEAD
• SERVICE
• FEATURES
• PRICE

"GENUINE DETROIT"
HEATING, REFRIGERATING AND AIR CONDITIONING CONTROLS
DETROIT LUBRICATOR COMPANY
DETROIT, MICHIGAN, U.S.A.
Canadian Representative—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

Air-Conditioning System in New Moose Grill in Erie, Pa., Gets Real Test On Opening Night

ERIE, Pa.—When Lodge No. 66 here of the Loyal Order of Moose opened its $25,000 grill room, the members and guests were treated to the luxury of complete air conditioning as well as a splendid dance floor, immense bar, mural painting, and indirect lighting.

The grill room was opened with a banquet attended by nearly 300 people. After the banquet, which lasted from 6:30 until 11 p. m., the doors were thrown open to all members and their friends.

Mr. Trubshaw of the Cleveland branch of Frick Co., installers of the air-conditioning system, reported that:

"After the banquet had been in progress about two hours, the room became filled with smoke; it dawned on me that the tables had been so arranged that the ladies' skirts were preventing the return air from going into the ducts. I had the tables in front of the ducts moved, and the air cleared in about 10 minutes.

450 Guests Accommodated

"After the banquet, about 40 couples started to dance, and the attendance in the room itself increased to somewhere near 450. This was far beyond what had been figured, but the system worked to a queen's taste. A crowd of 300 persons, including 60 dancers, was originally estimated upon, and the weather being cool permitted overloading to this extent."

Two machines of 15-hp. each cool this ultra-modern grill, which measures 40x120x9 ft. The Erie Machine Shops installed the system.

The Erie Machine Shops have used a dramatic method of advertising the installation in saying that 30 tons of ice every 24 hours would be required to produce the same cooling effect as the Frick system.

Distinctive feature of this air-conditioning system is the use of separate blower units for the fresh air and recirculated air.

The unit handling fresh air is equipped with eight rows of tubes of direct-expansion coils, and delivers the cooled air along one side of the room, directly under the ceiling.

The unit handling the return air has six rows of tubes in the cooling coils, and delivers its air into the opposite side of the room.

Whirlpool Action Created

The fresh air unit handles 2,500 c.f.m., but 3,500 cu. ft. of recirculated air pass through the other unit.

Outlets from the ducts are so located with relation to the ceiling that a slow whirlpool action is created, thoroughly mixing the fresh and recirculated air before they settle toward the floor.

The volumes of air given above are handled under maximum load conditions. A useful arrangement in adapting the system perfectly to the requirements is the air connection between the conditioning units. This is not an automatic by-pass but is simply an air trunk between the two units, with a hand-operated damper; the damper makes it possible to feed some recirculated air to the fresh air duct or vice versa.

Dampers in other ducts assist in making this adjustment. The amount of fresh air can be varied from none to 80 per cent.

Central Station Heating

Steam for winter heating is supplied from the pipe line under the street and is thus available at all times. Both tempering and heating coils are installed in the fresh air unit, while the return air has only the heating element.

If the weather moderates to the extent of going above 70° F., the cooling part of the system automatically comes into play. When the room is crowded and the air becomes too warm for dancing, cooling may be used, especially on the recirculated air, even though the fresh air is between 45 and 55°.

The machines are connected to common suction and liquid lines and the crankcases have equalizing connections above and below the oil level; the receivers are also equalized. A Cuno filter is inserted in the liquid lines.

The main points in the operation of the system may be stated as follows:

First: If the room temperature is 80° F. or above, both blower units come into operation, and one of the refrigerating machines is started. This machine is connected with cooling coils in each unit.

Second: The other refrigerating machine begins operating when the suction pressure builds up to 42 lbs., this machine being controlled entirely from the pressurestat.

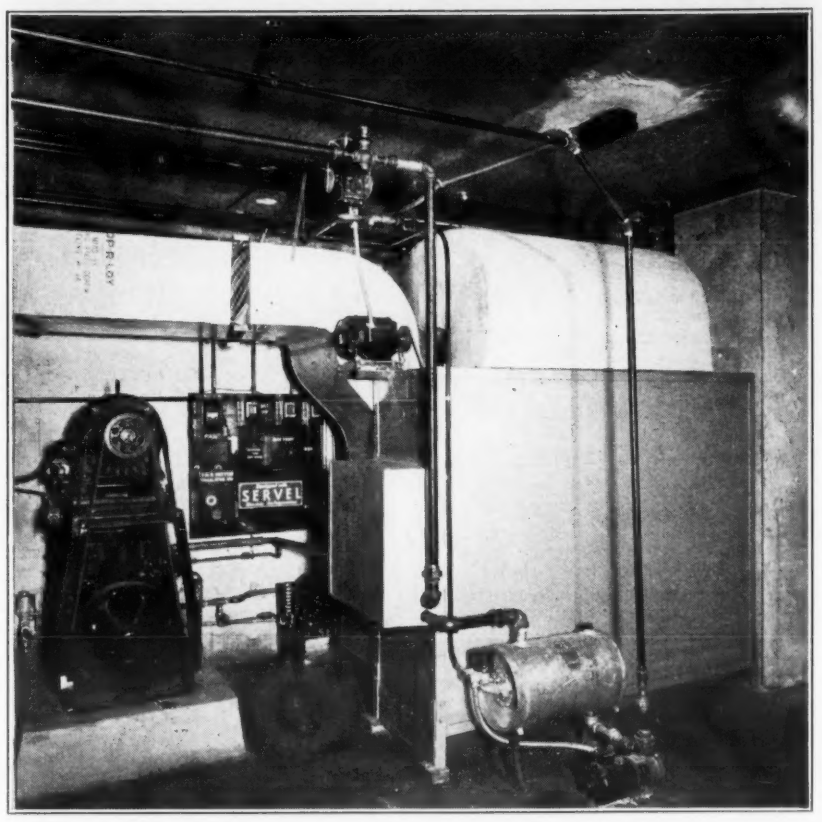
Humidity Control

Third: If the relative humidity is greater than 50 per cent when the dry bulb temperature is between 75 and 80° F., the first machine will be started by a humidistat. If the heat load is very light, this machine is prevented by its own pressurestat from continuing to run until the coils are frosted.

Fourth: When it is a cool day outside and there is a large and active crowd in the room, the equipment can automatically shift from heating to cooling. Two thermostats are set to turn on the heat in steps, at 70° and 72°; if the temperature rises to 75°, the heat is shut off, and provided the humidity is high, one refrigerating machine then starts; otherwise it doesn't start until the temperature reaches 80.

Temperatures may be held at different levels desired by adjusting the control instruments and maintaining the same relative difference between instruments.

Year-Round Comfort for Hotel Diners



When the $40,000 Coral Room of the Hotel McCurdy in Evansville, Ind., was opened last year patrons were assured of comfort by the installation of a Servel year-'round air-conditioning system. Equipment for cooling consists of two 10-ton Servel compressors, each handling one central conditioning unit, as shown in the above picture. The system in the summer is controlled by compensating thermostats, and in the winter by room thermostats.

Conditioning Keeps Candy Stores Better

YORK, Pa.—Air conditioning installed in the warehouse of C. H. Stallman & Son, wholesale candy and tobacco distributor here, in addition to eliminating the personal discomforts of hot weather, has kept candy stocks in better condition, permitted stocking of high qualities, and brought additional volume in "lean months," declares George L. Stallman, Jr., executive of the firm.

Formerly all candy, particularly chocolate, got soft and turned color in hot weather; and in an atmosphere where the humidity was excessive, such as a warehouse, hard candies became sticky and unsaleable, Mr. Stallman said.

Commenting on the results of the air-conditioning system, he says:

"We find that these worries have been completely removed from our minds by the constant temperature and relative humidity which the system has enabled us to maintain in our warehouse in all seasons. In addition, it has been possible for us to stock many higher quality candies, which many retailers are capable of selling in the summer time, but which the average jobber cannot stock because of spoilage due to weather and humidity.

"Being able to stock these high qualities has meant additional volume for us during the lean candy months. Not only has air conditioning kept our stock in good condition, but it has enabled us to buy more freely, without fear of loss through spoilage."

The air-conditioning equipment, which was furnished by the Careva Co., local York distributor, consists of one C-600 horizontal-type York air conditioner, and one 444 FW 5-hp. York condensing unit.

York Promotion Plans Explained to Field

YORK, Pa.—Sales promotion and advertising plans for York commercial refrigeration and air conditioning were explained to York branch salesmen in a series of meetings held in the early part of February by J. L. Rosenmiller, sales promotion manager of the York Ice Machinery Corp.

His itinerary included Philadelphia; Brooklyn; Boston; Charlotte, N. C.; Atlanta; Houston; Kansas City; St. Louis; New Orleans; Chicago; and Cleveland. The last meeting was held Tuesday, Feb. 11, in Cleveland.

At each meeting he first presented the company's 1936 slogan "Call on York—Headquarters for Mechanical Cooling Since 1885." This slogan is being stressed in consumer advertising which started two weeks ago in such publications as *Time, Business Week, Saturday Evening Post,* and *Fortune.*

He then presented the new sales literature for each of the company's sales divisions—air conditioning, industrial refrigeration, commercial refrigeration, dairy machinery, and accessories and supplies.

Mr. Rosenmiller also showed the new window displays, electric installation signs, reported on national expositions of equipment in which York will display this year, and announced the new telephone listing plan under which distributor and branch offices will be listed in classified sections of telephone books under "Refrigerating Equipment" and "Air-Conditioning Equipment."

The 1936 direct mail plan was presented in an elaborate portfolio containing several distinct campaigns, directed at meat markets, florists, restaurants, hotels, and grilles on refrigeration; and at retail stores and specialty shops, restaurants, hotels, and grilles, offices, and funeral homes on air conditioning.

Color Printers Find Air Conditioning Improves Work

NEW YORK CITY—Installation of an air-conditioning system in their plant has enabled Robert Teller Sons & Dorner, color printers, to turn out quality color printing jobs independent of atmospheric conditions.

Previous to installation of the system, the company's output depended largely on weather conditions. Removal of old ink, film, and foreign material from plates is an important problem in color printing; unless the humidity is below 65 per cent, this operation is effected only with great difficulty.

On "rush" jobs, the company often attempted to turn out the work despite adverse weather, but experience indicated that, when plates were not perfectly clean, the result was not up to standard. So, in most cases, the company held off until favorable weather conditions, with resultant delay, loss, and dissatisfaction.

Finally the company installed a conditioning system, with compressor, fan, cooling coils, and a duct system with an outlet in each of two rooms.

With the exception of the compressor, the equipment was placed entirely overhead. The fan, at one end of the duct, picks up room air, passes it through the cooling coils, and then discharges it through the ducts to the outlets.

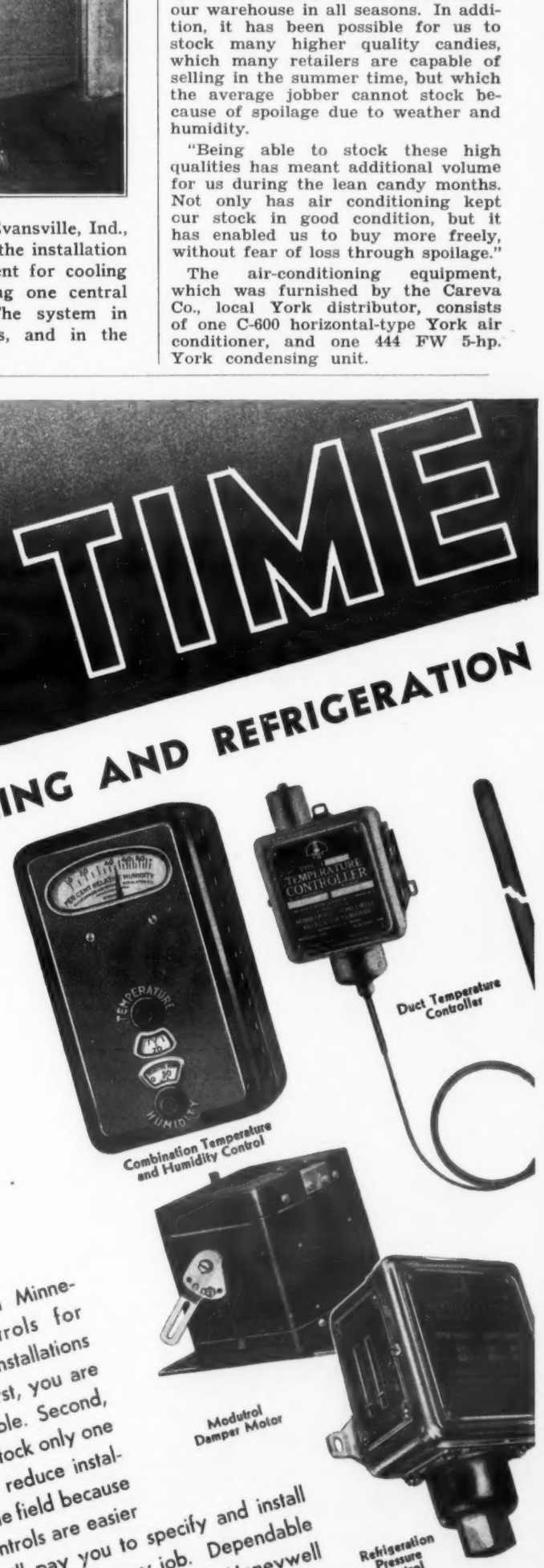
Full recirculation is obtained, and the delivered air has a relative humidity ranging between 45 and 65 per cent, varying according to atmospheric conditions.

The system is credited with improving quality of the company's printing, eliminating shutdowns and delays, and the owners assert it has paid for itself during the few months it has been in operation.

SAVE TIME

ON COMFORT COOLING AND REFRIGERATION INSTALLATIONS

Standardize ON MINNEAPOLIS HONEYWELL CONTROLS FOR Every Job



WHEN you standardize on Minneapolis-Honeywell controls for refrigeration or air conditioning installations you benefit in many ways. First, you are using the finest controls available. Second, you or your dealers have to stock only one line of controls. Third, you reduce installation and service costs in the field because Minneapolis-Honeywell controls are easier to adjust and install. It will pay you to specify and install Minneapolis-Honeywell controls on every job. Dependable controls cost less than service . . . Minneapolis-Honeywell Regulator Co., 2807 Fourth Ave. South, Minneapolis, Minn. Branch and distributing offices in all principal cities.

MINNEAPOLIS-HONEYWELL

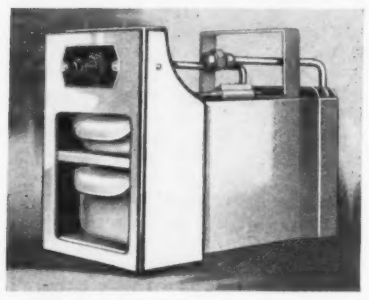
Control Systems

BROWN INSTRUMENTS FOR INDICATING, RECORDING AND CONTROLLING

The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

The NEW "HUMIDIPACK" EVAPORATOR by PEERLESS

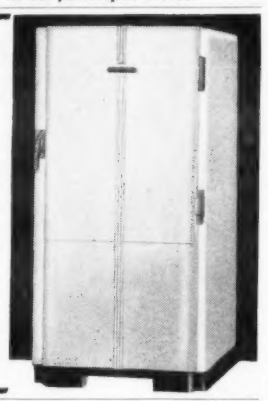


A "1936" line of Household Evaporators with "1936" sales points.

1. High Box Humidity
2. Fast Ice Cube Freezing
3. Clean design—Smooth exterior
4. Reasonable prices
5. "Humidi-pack" is the Power-Pack of Refrigeration

PEERLESS ICE MACHINE CO.
CHICAGO 515 W. 35th St. — TWO FACTORIES — NEW YORK 43-00 36th St., L.I.C.
Representatives in all principal cities.

***Use this New* DAYTON LINE *for your* PRIVATE BRAND**



- Dayton Factory-to-Dealer Exclusive Territory Plan gives you absolute control of your prices, and merchandising policies. Makes it possible for you to lick competition. You make AND KEEP worthwhile profits.

Complete New 1936 DeLuxe and Standard lines. Write for full details right now.

HEINZ & MUNSCHAUER
22 Superior St. *Established 1865* **Buffalo, N.Y.**

REMPE COILS
FOR AIR CONDITIONING UNITS

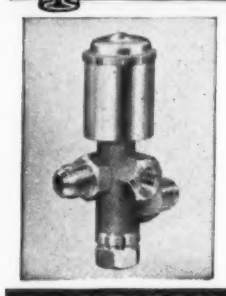
Built to last, to give efficient, trouble-free service for years, to do your every heating or cooling job perfectly.

Also any type of extended surface coils made with Aluminum, Copper and Steel Fins on Copper and Steel Tubing . . . Expansion Valves . . . Pipe Bends and coils.

New Catalogue now in production . . . watch for it.

REMPE "FIN COIL" COMPANY
340 N. Sacramento Boulevard — Chicago, Illinois

STANDARD REFRIGERATING APPLIANCES



TWO TEMPERATURE VALVES *with* BUILT-IN CHEEK

Write for bulletin on complete line covering refrigerating appliances, liquid line filters, dehydrators, acid neutralizers, standard parts and materials, service tools, shaft seals, bearing metals and parts. Descriptive literature will be gladly furnished on any or all of these lines on request.

AMERICAN INJECTOR COMPANY 1481-14th. Street, Detroit, Mich.

QUICK FREEZE

KRAMER
DOMESTIC EVAPORATORS

Made in stock sizes of 2 to 5 trays, and to order. ALL COPPER, continuous tube, processed below each tray sleeve.

SEND FOR CATALOG

TRENTON AUTO RADIATOR WORKS
210-212 West 65th. St. New York City — TRENTON New Jersey — 5114 Liberty Ave. Pittsburgh, Pa.

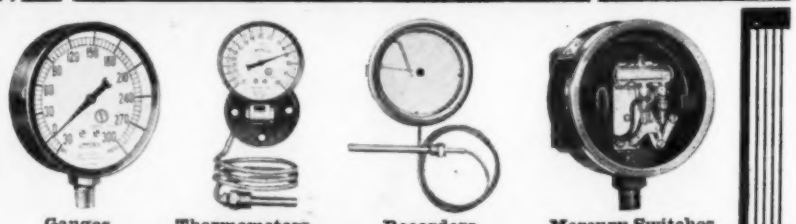
TYPE KR— 12 MODELS

RANCOSTAT
—the **Stainless Steel** Thermostat

Simplicity of construction is extremely important in a thermostat—and Rancostats are extremely simple. The parts are larger—stronger—and machined to very close precision limits. More accurate manufacture. More thorough inspection on the assembly line and in the sub-assembly of the various parts. That's why Rancostats are safe, dependable, long-wearing units.

The Automatic Reclosing Circuit Breaker Co.
Columbus, Ohio

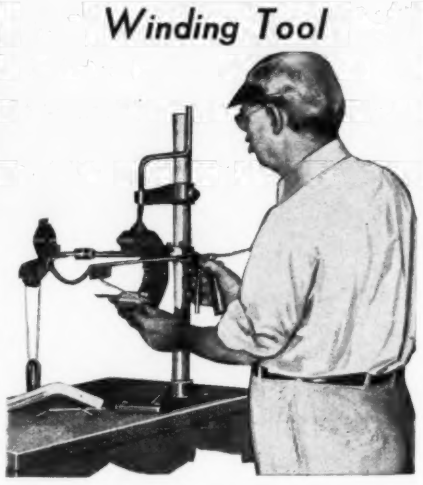
Refrigeration Instruments by Marsh



Gauges — Thermometers — Recorders — Mercury Switches

Jas. P. Marsh Corporation
2067 SOUTHPORT AVE., CHICAGO, ILL.

Winding Tool



New armature winding tool of P. E. Chapman Electrical Works.

* * *

Chapman Markets New Motor Winding Tool

ST. LOUIS—P. E. Chapman Electrical Works, manufacturer of armature and coil-winding machines, has just put on the market a winding tool, designed to aid in the winding of small stators, such as on refrigerator motors, by eliminating the necessity for hand winding.

The winding tools, or guns, are made in two grades, the first designed for everyday production and the second for occasional use. Differences between the two are in weight, minimum size of wire handled, life, and price.

Most useful in winding fractional to small-horsepower, concentrically wound, single-phase stators, the tool may be used on other types of windings and on a few armatures. In operation, the wire passes through the gun, which is used to push (or pull) it through the stator and lay it into the slots.

Accessories for use with the tool include an overhung vise for holding stators while winding with the gun or while assembling pre-wound coils about a turn counter, coil cheeks, and an internal coil tamper.

Emerson Offers New Single-Phase Motor

ST. LOUIS—To meet demand for a single-phase motor with a smooth torque-speed curve, starting features of the repulsion motor, and approximate constant-speed load operation of the induction motor, Emerson Electric Mfg. Co. has developed the Emerson SR single-phase motor, in ratings of 1, 1½, 2, and 3 hp.

The motor has an armature with both a squirrel-cage winding and a repulsion or commuted winding. Both windings operate as such at all times; commutator of the repulsion winding is not short circuited as the motor attains speed, and the squirrel cage is not opened at slow or starting speeds. Starting action is said to be similar to a polyphase motor.

The motor is designed for applications which call for starting and bringing to speed sustained heavy starting loads, such as air compressors, commercial refrigeration units, and similar devices which may offer a heavy starting load, or in which starting is greatly prolonged because of excessive friction.

Bulletin Warns Service Men on Location of Pressure Cutout

Be careful about water-cooling units on which the high pressure cutout is connected at the liquid receiver outlet, is the warning sounded in the "Liquid Line," bulletin for service men published by Refrigeration Service, Inc., Los Angeles.

A plugged liquid-pickup tube (and this is where the liquid line usually plugs) can cause a blown-up receiver because the high-pressure cutout can never work.

No matter how many good reasons there are for putting it there, says the bulletin, the high-pressure cutout should never be attached to the receiver liquid-line valve.

Refrigeration on Power Conference Program

CHICAGO—Insulation and refrigerants will be among the refrigeration topics discussed at the Midwest Power Engineering Conference and the Midwest Engineering and Power Exposition to be held here April 20-24.

L. S. Morse, executive engineer of the York Ice Machinery Corp., and president of the American Society of Refrigeration Engineers, will speak on "Power Used in Air Conditioning."

Meeting at the Palmer House in the morning and at the International Ampitheater in the afternoon, delegates will hear conference sessions on power economics, coal, refrigeration, and power transmission.

Service Methods

Hydrostatic Pressures on Fittings And How to Eliminate Them

By H. H. Lamar, Engineer, Refrigeration Valve Division, Kerotest Mfg. Co.

REFRIGERATION systems, no matter how carefully they are installed or how perfect the compressor and controls operate, are liable to shut down at any time unless proper precautions are taken to protect the flare tube connections on the low side of the system from moisture where alternate freezing and thawing may take place.

The reason for this is obvious. The thread and tube support portion of the SAE flare nut is straight, and in view of the fact that it is undesirable to use a pipe thread compound of any kind, moisture will work its way into the thread and the space between the outside of the tube and the sleeve of the flare nut, and will freeze and thaw and start destruction of the connection.

This freezing and thawing may not seem important when the system is started at first, due to the fact that

Results of Freezing

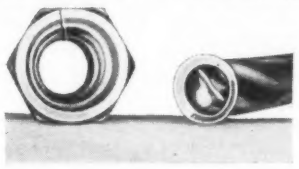


Fig. 1 shows how a flare nut is broken and tubing collapses as a result of hydrostatic pressure.

it will take some time for the flare connections to absorb enough moisture to completely fill the empty spaces between the flare nut, copper tubing and threaded portion.

But on every cycle the small amount of moisture absorbed will freeze and thaw and additional moisture will tend to find its way into any crevice and penetrate into the most remote spaces, due to capillary attraction, until the nut becomes completely filled with moisture.

When this moisture solidifies in the freezing process, the expansion that takes place creates a hydrostatic pressure of several thousand pounds.

The result is broken flare nuts or collapsed tubing (as shown in Figure 1), causing forced shutdowns, loss of refrigerant, wastage of perishable food stuffs, and sometimes considerable damage to the system.

All these conditions may be avoided by covering the ends of the flared tubing and rear few threads, with Zero-Flex. This composition meets the specific requirements of modern refrigeration, such as perfect sealing qualities; not to dry, harden, or crack; and easy to apply.

Zero-Flex permanently remains plastic and it never loses its sealing properties at all temperatures from 55° F. below zero to 212° F. above zero. It does not give off objectionable odors. Its odor is like peppermint or wintergreen. Zero-Flex is impervious to and unaffected by oils, grease, alcohol, glycerine or brines.

This compound may be used any place where a moisture or leak-proof seal is required, and may be coated with enamel, paint or varnish. It

Application

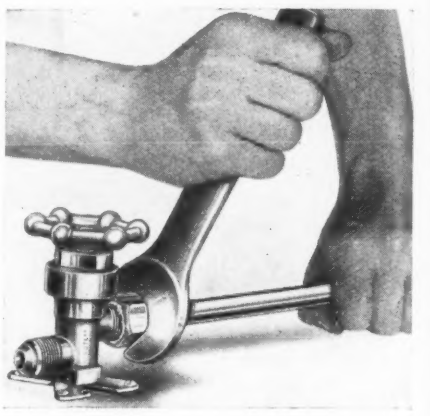


Fig. 2 demonstrates method of applying Zero-Flex.

spreads uniformly and is easy to apply.

A typical application of Zero-Flex is shown on Figure No. 2, and directions for its use are given below:

Directions

(1) Wipe joints free of grease or oil.

(2) Set the tubing snugly against the valve flares and slip union over joint and screw tight.

(3) Squeeze out a portion of Zero-Flex from the handy tube and apply to the neck of the flared tubing and to the threaded end of the flare nut with a flat stick or swab. Be sure to press Zero-Flex into all crevices, holes, or cracks. (Do not use fingers as Zero-Flex is very difficult to remove.)

(4) The result is a perfect joint that is absolutely impervious to moisture at all temperatures from 55° F. below zero to 212° F. above zero—a joint free from cracking.

(5) Immediately after application or when convenient, a Zero-Flex joint may be coated with enamel, paint or varnish.

Ordinance Adopted to Stop Radio Interference

CUDAHY, Wis.—An ordinance designed to eliminate electrical interference with radio was recently passed by the city council here.

Fines of $5 to $10, or sentences of from 10 to 30 days in the house of correction, will be imposed on persons operating any apparatus that causes electro-static or electro-magnetic waves to radiate and interfere with radio broadcast reception.

No restrictions have been placed on the use of medical or dental instruments.

G-E Introduces New Circuit Breaker

SCHENECTADY—General Electric Co.'s recently introduced AF-1 air circuit breaker, which replaces fuses and is designed for the control and protection of industrial circuits, house service entrances, branch circuits, refrigerators, ranges, and similar appliances, has been redesigned to provide a "mid-position" of the handle, to indicate automatic tripping.

Upon automatic tripping, the handle now is in a position between the "on" and "off" positions, solving the problem of indication when the breaker is mounted in an enclosed case. Reclosing the breaker is done by moving the handle to the extreme "off" position, after which it is ready for closing.

Other improvements on the breaker include easier operation, a mechanical "pry," to open the contacts when manually operated, and, in double and triple-pole units, a latch more resistant to shocks.

Rhodes Made Allen-Bradley Representative in Conn.

CROMWELL, Conn.—S. A. Rhodes of this city is the new Connecticut representative of the Allen-Bradley Co., manufacturer of electric motor control equipment.

INFORMAL TALK NUMBER 39

There's No Argument About The Value of Trained Men

This has been proven over and over. And it's true in refrigeration and air conditioning work, as in any other line. The trained man earns more, not only for himself, but also for his employer. He is worth more because he knows more. His training is an asset to himself, and a profit to his employer.

The trained man at higher pay is cheaper than the untrained fellow who works for less.

Employers should insist on R-A-C-I Preparatory and Shop Training for their men. It is the only training officially endorsed by leading manufacturers of refrigeration and air conditioning equipment, and supervised by factory engineers appointed for the purpose. Write for particulars.

The REFRIGERATION AND AIR CONDITIONING INSTITUTE
2130-2158 LAWRENCE AVENUE • CHICAGO

The Officially Endorsed School

A Letter from Grover Townsend

EXPLANATORY NOTE—Since the announcement of a "Catalog Mailing Service" which the NEWS is planning to provide for the benefit of our subscribers, a large number of independent service companies have asked to be registered for this service. In the letters have been many comments regarding the helpful information in the columns of ELECTRIC REFRIGERATION NEWS with suggestions about the kind of additional information which would be valuable to service men.

Letters have been written to a number of these subscribers asking certain specific questions such as:

How did you happen to get into the service business?

Where did you receive your first training in service work?

What kind of jobs are you called upon to handle?

How do you get new business and how do you estimate your charges?

What kind of tools and equipment do you have in your shop?

Where do you buy your supplies and materials?

In response to these questions some very interesting letters have been received which will be published in coming issues of the NEWS.

It is hoped that the publication of these letters will encourage other service men to tell in detail about their problems and progress. The exchange of experiences should be helpful to all those engaged in refrigeration service work.—Publisher.

Grover A Townsend
Refrigeration Technician
175 River St., Salamanca, N. Y.
All Makes of Electric Refrigerators
Installed—Serviced—Repaired
January 24, 1936.

Publisher:

Thank you for your letter of Jan. 23. As we have been faced with the problem of securing more heat from stubborn stoves—this evening my mother had to put the crock of eggs which she keeps in the cupboard in the refrigerator to thaw out—we have plenty of time to meditate while toasting first one side then the other before the fire. I will try to limber up my fingers on the old keyboard.

Service calls have reached zero, too. I guess most units have hibernated. This brings up the problem of keeping walk-in coolers in meat markets smelling fresh. The best that I could do to help a local merchant was to lower the cut-in point and the differential. This helps some on the warmer days but what is a fellow going to do when the mercury forgets to come back up—build a fire in the cooler?

Here I am asking for information, not giving it. Well, I will do my best as repayment to the NEWS for helping me out of many a tight spot with the necessary information.

Prosperity Far Around the Corner

Early in my high school career I decided to go to Mechanics Institute in Rochester and study electrical engineering. I sold newspapers to earn the money for tuition and books, hoping that my parents would be able to help with the rest. I graduated in June, 1930, with prosperity far around the corner. Two months earlier my father fell from the top of a boxcar and broke his knee-cap. It was two years before his knee was strong enough, after a second operation by a bone specialist for him to go back to work. Meanwhile our savings and all my younger brother and I could earn selling newspapers and doing odd jobs went to keep up the house and pay the specialist. Thanks to a thrifty mother, we broke even.

Being forced to abandon hopes of going to college, I returned to high school as a post graduate; and in the next four years completed the vocational course and most of the commercial course. In 1933 I became acquainted with the Utilities Engineering Institute of Chicago through an advertisement in a local paper. Last spring I reported at their Chicago headquarters for two weeks of shop training.

On the last day of our training, Mr. Kampen gave us a talk about the necessary service tools. Mr. Calder asked us about our prospects and explained their placement service. About three weeks later I received a list of 10 dealers in Buffalo to whom Mr. Calder had written letters of introduction. After a day of traveling the length and the breadth of Buffalo, I decided that I was better off in Salamanca where I was holding down two part time jobs.

A Home-Made Outfit

Meanwhile the tools which I had ordered, about $65 worth, had arrived. I managed to pick up parts of an orphan refrigerator about town. I placed the cabinet in the pantry and the unit in the basement. After spending $43 for materials and spending hours of labor—which, of course, makes the refrigerator priceless—the machine worked. As an oil pump the compressor worked fine. The oil found its way to the evaporator where most of it stayed. I guess this is the reason why most of the owners got disgusted and junked their machines. An efficient Riley oil trap put an end to this. Except for pounding at the beginning of the cycle the unit functioned all right. During the month of August it used only 85 cents worth of electricity. As the unit is now in the kitchen in our new residence, I have replaced the noisy compressor with a Brunner.

Late last fall we moved to a better location. A one-story barn in the rear provides space for the family car, my service car, and a shop with an attic in which to store things. After my first couple of orders for tools and supplies and purchasing a Chevrolet coupe with part of the money I had saved in the last three years, I made other purchases within my income from service work, from working in the press room of a local newspaper, and from working for the Buffalo *Evening News*. I now have most of the necessary hand tools and a supply of refrigerants, compressor oil, tubing, and fittings. As I get the money I am adding to my stock of valves and belts. In a couple of months I hope to have enough money to buy a couple of time and temperature recorders. I was planning to build a service unit as soon as I could get a motor to replace the ancient one in my shop; but, after reading the description of the Curtis Master Service Unit in this week's NEWS, I think I will inquire further. It seems to be the answer to a service man's prayer.

Spent $25 for Advertising

So far my satisfied customers have been my best advertisement as they pass the word along. I spent a little over $25 last year in newspaper advertisements. I ran a 1-inch advertisement in one daily and two weekly papers. I got a greater return from the weekly papers. This year I expect to restrict my newspaper advertising to the weeklies. I have contracted for a half page in color in the local telephone directory which will cost me a little more than the daily newspaper as I had to change from a private to a business telephone.

I find the commercial field much more profitable than the domestic. I regret that the Institute did not place more emphasis on its training along commercial lines. The NEWS has helped a great deal in filling up that gap in my training. Whenever I get stuck with a tough problem, I wait for that week's NEWS in whose pages I find enough facts to help me with the solution. It is almost uncanny how the facts are always there in answer to my need.

I have been getting a dollar an hour for my services which is in accord with what other skilled labor receives in this small city of about ten thousand. Furniture manufacturing, leather, wool, Luminite products, and three railroads are its chief interests. Most of the commercial refrigerators were installed by firms from Buffalo, 60 miles away, and from Rochester, 90 miles away. Lipman and Frigidaire are the popular makes. I usually get a call when trouble arises between regular inspection calls of the firms' service men. Beer joints have been a good source for service calls but tough on collecting.

I doubt that I could win a prize as a story teller; but I will try to give a clear picture of a couple of the repair jobs that I have had.

His First Commercial Job

My first commercial job came as a result of a tip from my brother who noticed that one of his newspaper customers was having trouble with his refrigerator. I called and found that a plumber whom the owner had called in had successfully punctured the condenser, blew up the pressure control, and killed most of the owner's flowers and grass. It was a hopeless wreck. He asked me to stop in at his ice cream parlor downtown where the unit was running all the time and the ice cream still soft. Let us call this story:

Understanding of Theory Overcometh Inexperience

Hitherto my acquaintance with a soda fountain had been from the top of the row of seats in front. In the next couple of days my knowledge of its innermost secrets grew by leaps and bounds.

I first inspected the Frigidaire water-cooled unit in the basement. I connected up my gauge set. The high side read 90 lbs. and the low side registered 24 in. of vacuum. The pressure control cut in at zero and out at 26 in. I set the water control for an outlet temperature of 80. The pressure still registered too high. I purged it down to 60 lbs. In a couple of hours it was back up again. I bypassed some of the pressure into the low side and tested for leaks. Found none. I purged again. (I found out later that this condition was caused by an overcharge of refrigerant not air.) I purged a couple of times the next day and still things remained the same.

As the temperature of the storage box, the soda water, and the beer cooler were correct, just the ice cream holes too warm, I came to the conclusion that the trouble was upstairs.

That evening I arrived on the job with the determination to solve it before I went to bed. I removed the coverings that concealed the float headers. After tracing the piping I noticed that the liquid line leading from the soda water cooler head to the ice cream cooler head was frosted. I knew that a liquid line should not do that. I came to the conclusion that liquid was not getting past the service valve on the head of the soda water cooler. Expansion was taking place as it left the valve. By the time the gas reached the other evaporator not much cooling effect remained.

I tried heating the valve to dislodge the plug. I guess it was not the right thing to do as it did not work. I decided that the expedient thing was to go around it. I closed all service valves, pinched off the liquid line before it reached the valve, and splicing the line, I inserted a tee. I connected the other line to it and capped the useless outlet. After purging the line with the aid of the gas pressure in the soda water cooler, I opened the liquid line. It sure was sweet music to my ears to hear the refrigerant rush into the starved evaporator. Well! I went to bed at 3 o'clock the next morning.

I arrived back on the job at 9. The high pressure cut-out was dancing a jig. The compressor would start and pump up to 120 lbs, stop until the water had cooled the condenser down, then start again. I held the water valve on and soon noticed that beads of condensation appeared on the condenser-receiver within an inch of the top.

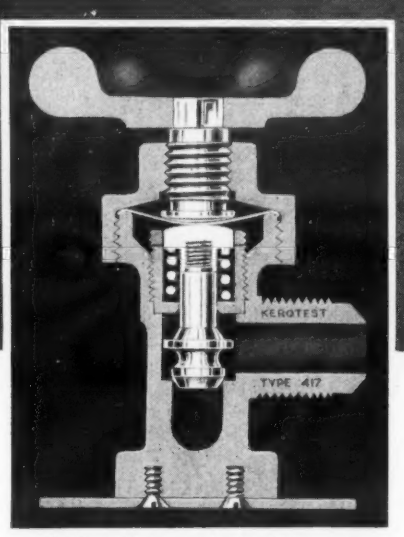
This was proof enough for me that it held too darn much. It is just my theory but I think that most of the oil had become lodged in the starved evaporator as I found the crankcase dry. During the night the oil was pumped back downstairs, filling the receiver. I refilled the crankcase with fresh oil and purged out about 10 lbs. of refrigerant and oil. The oil was the best double for shellac that I have yet seen.

I spent the next couple of days trying to figure out how to adjust the control. I either froze the ice cream so hard that it could not be scouped up or had it so soft that the customer got too much for his money. I must confess that I did not know what nut to turn to adjust the control. That week's NEWS came to my rescue with a fine description of the workings of a Frigidaire pressure control. SUCCESS.

Note: Another story about the experiences of Grover Townsend will appear in next week's issue.

KEROTEST

LEADERSHIP IN THE WORLD *of* REFRIGERATION VALVES IS FOUNDED ON SUPERIOR MATERIALS *and* IMPROVED DESIGN



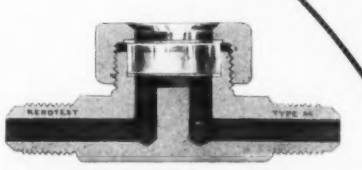
Kerotest Diaphragm Packless Valves are first choice of the refrigeration industry because they combine every advantage a modern valve should possess.

Kerotest made the first commercial shipment of refrigeration valves in 1924 and have remained first in the refrigeration valve industry ever since. They were first to develop the forged valve construction . . . first to design the one and only Diaphragm Packless Valve . . . first to meet every new valve requirement . . . first to build a complete line of accessories including the famous GW Control . . . and first to introduce forged steel valve and manifold construction to meet the modern demands for large refrigerator and air conditioning installations.

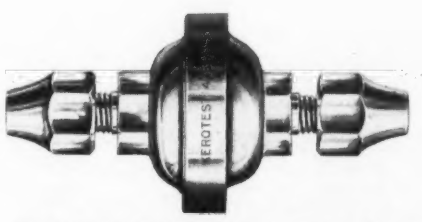
Today, the Kerotest line is replete with every known requirement of the refrigeration industry, and available through a nationwide network of Kerotest jobbers and representatives as listed below.

KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.

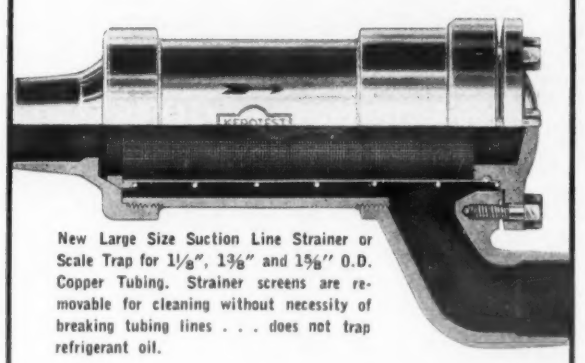
KEROTEST



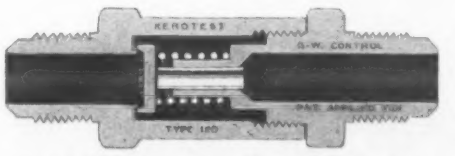
The Kerotest Telltale Liquid Indicator Type 54 is a welcome accessory to the industry—saves much experimenting and testing when the system is not working 100 per cent.



This generously large Forged Brass Strainer Type 406 provides a very efficient trap for tube scale, compressor chips and other foreign matter which finds its way into the liquid refrigerant or oil.



New Large Size Suction Line Strainer or Scale Trap for 1⅛", 1⅜" and 1⅝" O.D. Copper Tubing. Strainer screens are removable for cleaning without necessity of breaking tubing lines . . . does not trap refrigerant oil.



Kerotest GW Control represents one of the greatest developments in modern refrigeration . . . assuring perfect regulation of refrigerant without interrupting proper return flow of the oil.

Jobbers in the United States

Albany, N. Y.....Hoy & Co.
Atlanta, Ga...J. M. Tull Metal & Supply Co., Inc.
Baltimore, Md.....Clendenin Bros., Inc.
Baltimore Md...Melchior, Armstrong, Dessau Co.
Bangor, Maine.....Utilities Distributors, Inc.
Boston, Mass.....A. E. Borden Co.
Bridgeport, Conn.....Parsons Bros.
Brooklyn, N. Y.
Coleman Electrical Supply Co., Inc.
Buffalo, N. Y.....Root, Neal & Co.
Cambridge, Mass...Melchior, Armstrong, Dessau Co.
Chicago, Ill.....H. W. Blythe Co.
Chicago, Ill.....Max A. R. Matthews
Chicago, Ill.....Borg-Warner Service Parts Co.
Chicago, Ill...Refrigeration Equip. & Supply Co.
Cincinnati, Ohio.....The Merkel Bros. Co.
Cincinnati, Ohio.....Williams & Co., Inc.
Cleveland, Ohio.....Williams & Co., Inc.
Columbus, Ohio.....The Justus & Parker Co.
Dallas, Texas.....The Electromotive Co.
Davenport, Iowa.....Republic Electric Co.
Denver, Colo.....Auto Equipment Co.
Des Moines, Iowa.....C. L. Percival Co.
Detroit, Mich.....J. M. Obere, Inc.
Fernwood, Miss.....Enochs Sales Co.
Fort Wayne, Ind.....H. J. Schroeder Co.
Greensboro, N. Y...Home Appliance Service Co.
Honolulu, T. H.....Theo. H. Davies & Co., Ltd.
Houston, Texas.....D. C. Lingo Co.
Indianapolis, Ind.....F. H. Langsenkamp Co.
Kansas City, Mo...Forslund Pump & Machinery Co.
Long Beach, Calif.....L. B. Marsh
Los Angeles, Calif.....Refrigeration Service, Inc.
Macon, Ga.....Lowe Electric Co.
Memphis, Tenn...United Refrigerator Supply Co.
Milwaukee, Wis...Chase Brass & Copper Co., Inc.
Minneapolis, Minn.
Chase Brass & Copper Co., Inc.
Minneapolis, Minn.
Refrigeration & Industrial Supply Co., Inc.
Newark, N. J.....McIntire Connector Co.
New Orleans, La.....Enochs Sales Co.
New York, N. Y.....Aetna Supply Co.
New York, N. Y.
Melchior, Armstrong, Dessau Co., Inc.
New York, N. Y...Paramount Electrical Supply Co.
Oklahoma City, Okla.....Mideke Supply Co.
Omaha, Nebraska.....United Supply Co.
Peoria, Ill.....Isaac Walker Hardware Co.
Philadelphia, Pa.
Melchior, Armstrong, Dessau Co., Inc.
Pittsburgh, Pa.....Williams & Co., Inc.
Portland, Oregon.....Harrison Sales Co.
Providence, R. I.
Rhode Island Supply & Engineering Co.
Rochester, N. Y.....Ontario Metal Supply, Inc.
Sacramento, Calif.....J. N. Blair Co.
St. Louis, Mo.....The Spangler Co.
San Francisco, Calif...California Refrigerator Co.
San Francisco, Calif.
Refrigerating & Power Specialties Co.
San Juan, Puerto, Rico..Refrigeration Supply Co.
Seattle, Wash.....Harrison Sales Co.
Sioux City, Iowa..National Refrigeration Service
Springfield, Mass...Home Utilities Service Supply
Syracuse, N. Y.....Syracuse Supply Co.
Tulsa, Okla.....Machine Tool & Supply Co.
Waterloo, Iowa.....Winterbottom Supply Co.
Wilkes Barre, Pa.....Radio Service Co.

Direct Factory Representatives

Chicago, Ill.....G. C. Taylor
Dallas, Texas.....C. E. Boren
Dayton, Ohio.....E. J. Kimm
Denver, Colo.....R. L. Chambers
Detroit, Mich.....T. F. Wilson
Los Angeles, Calif.....Van D. Clothier
New York, N. Y.....K. M. Newcum
San Francisco, Calif.....A. W. V. Johnson
Omaha, Nebr.....Austin Jones

Jobbers in Foreign Countries

AUSTRALIA
Sydney.....F. C. Lovelock, Ltd.

CANADA
Montreal, Toronto and Winnipeg—Railway & Engineering Specialties. Vancouver—Fleck Brothers, Inc.

The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

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are products of established Value

Reliably recommended for your particular needs.

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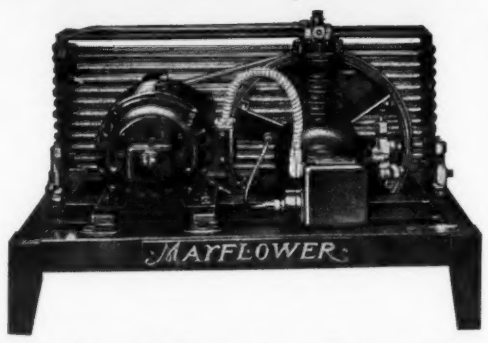

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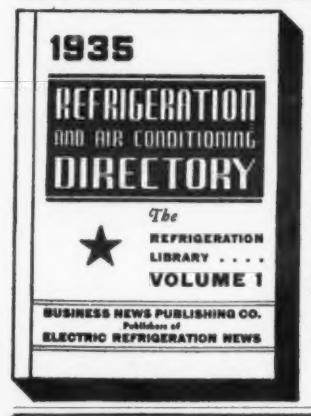
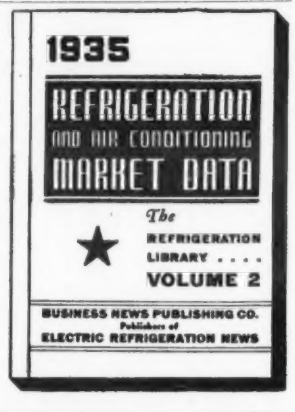


The **DIRECTORY** (380 pages, $3.00 per copy) is the industry reference book for all known sources of supply for refrigeration and air-conditioning products. Next edition will be published July 1, 1936.

Every sales executive should have the **MARKET DATA BOOK** (304 pages, $3.00 per copy) for its compilation of sales methods and sales figures recording industry development to date. Next edition to be published Sept. 1, 1936.

Combination Price for Both Books, $5.00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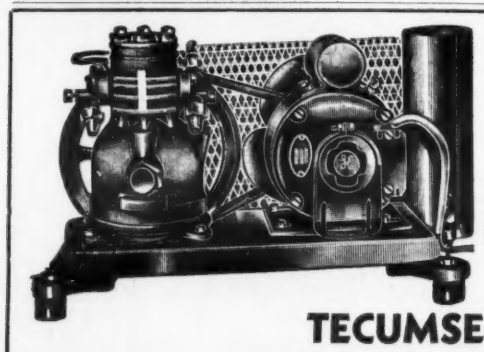

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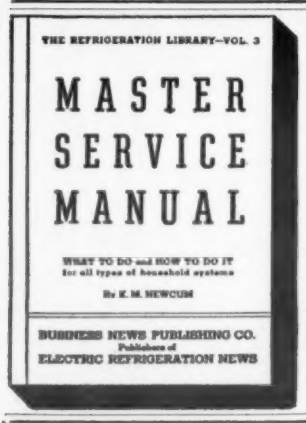
THE REFRIGERATION LIBRARY—VOL. 3
MASTER SERVICE MANUAL
WHAT TO DO and HOW TO DO IT for all types of household systems
By K. M. NEWCUM
BUSINESS NEWS PUBLISHING CO.
ELECTRIC REFRIGERATION NEWS

The Master Service Manual ($3.00 per copy) includes the necessary instructions for servicing all the fundamental types of household systems. Detailed instructions for the servicing of more than a dozen "orphan makes" are also included.

The Refrigeration and Air Conditioning Specifications Book ($3.00 per copy) will contain detailed comparative data which every dealer, salesman, and service man has been wanting. To be published in April, 1936.

Combination Price for Both Books, $5.00

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The World's Largest Manufacturer of V-Belts

The Master Service Manual—Just Off the Press—Tells What to Do and Shows How to Do It

Off the press last week and now being distributed to service men who had ordered it in advance is the 440-page 1936 MASTER SERVICE MANUAL, written by K. M. Newcum, and published by Business News Publishing Co., 5229 Cass Ave., Detroit, publishers of ELECTRIC REFRIGERATION NEWS.

This book gives the "What to do" and "How to Do it" for all types of household refrigeration systems. The MANUAL not only tells how to do it, but also *shows* how it should be done with the 240 some pictures, drawings, and diagrams that illustrate the book.

First two chapters of the book explain the principles of electric refrigeration and how refrigeration is accomplished, in terms that are easy to understand. Functions of the various parts of the system are outlined, and an explanation is given of the "low side" and "high pressure" side of the system.

Chapter 3 discusses in considerable detail the refrigerants which are used in refrigerating systems. The nature of each of the refrigerants is described, and the author tells what are the desirable and undesirable features of the various gases.

Operating pressure ranges of the refrigerants are given, and for further reference on this subject a chart of pressure-temperature relations for all refrigerants is provided.

Also told in this chapter is methods of detecting leaks, how the different refrigerants mix with oils, and which ones tend to be corrosive. A valuable table in this chapter is one which gives the kinds of refrigerant used in present and past makes of refrigerators.

In Chapters 4 through 7 Author Newcum takes up the various major parts of a household refrigeration system, and describes the construction and workings of each of these parts in considerable detail.

Chapter 4 deals with condensing units. Construction of the principal *types* of compressors is presented, and there is a description and illustrations of the component compressor parts.

Mr. Newcum tells how each of these parts is supposed to function, where wear may be expected, and why these parts sometimes fail to work properly. He also explains situations where it is advisable for the service man to attempt repairs, and then describes how such repairs should be made.

"Evaporators" is the title of Chapter 5, but it might better have been "Evaporators and Refrigerant Control Valves," because most of the subject matter is devoted to a discussion of the various types of refrigerant metering devices.

Service men who have difficulty in making refrigerant control devices function in a satisfactory way should enjoy the precise way in which Mr. Newcum explains the operation of the low side float, the high side float, the automatic expansion valve, and the thermostatic expansion valve.

They will appreciate also, his analysis of the causes of difficulties with these various devices, and the suggested methods for getting them back into proper operating condition.

Information is also provided as to the proper adjustment of such valves.

There are two separate principles employed to actuate the motor control mechanism of an electric refrigerator —the low pressure control and the temperature, or thermostatic, control.

These form the basis for the subject discussed in Chapter 7, but the author goes much further than merely discribing the functions of these two types of controls—he tells how the leading *makes* of controls operate, and how they should be adjusted. Possible difficulties with controls are also pointed out.

"Although electric motors used in refrigeration service constitute a separate study in themselves, it is necessary for the service man to have a reasonable knowledge of the function of the several types and makes," says the opening sentence of Chapter 7, which deals with motors.

And having made that statement, the MANUAL goes on to do just that—to give the service man information on how to do the service operations on motors, particularly the repulsion-induction type, that he is able to do by himself, without going to a shop that specializes in motor repairs. The service work that Mr. Newcum advises the service man to attempt is outlined in some detail.

Also covered in Chapter 7 is the subject of belts which are used for driving refrigeration compressors.

To many men in the refrigeration industry today, the installation of a household electric refrigerator merely means trucking a refrigerator into a home, and plugging it into an electrical outlet.

But Mr. Newcum has a different story to tell in Chapter 8. He shows how proper placement, installation, and checking of a refrigerator can save many future service calls. Emphasis is also placed on the care to be taken in making and testing joints.

At the end of the chapter are given step-by-step instructions for 20 installation operations—such as making a flare, installing an evaporator in a refrigerator, etc. Each step is explained in simple, understandable language.

Chapter 9, under the title of "Service," is what might be termed the "heart" of the book.

In this chapter Mr. Newcum takes up service problems on the complete system. He divides refrigerant system into three different classifications (the distinguishing feature being the refrigerant control device) and then further subdivides each classification.

For each subdivision he analyzes the possible service complaints, and then describes the proper remedy.

Going further, he gives the step-by-step process of making repairs, the same as in the case of installation operations.

At the end of the book is a handy table of where the diagnosis and corresponding remedies for the various service complaints can be found.

If a service man runs across a service complaint or problem that isn't covered in Chapter 9, it must be a very peculiar problem indeed.

The remaining 15 chapters of the MASTER SERVICE MANUAL are each a separate "service manual," each chapter giving instructions on how to service some make of refrigerating system no longer being manufactured—in other words, these chapters really constitute an "orphan" service manual.

These chapters on "orphan" makes have a value other than merely telling how to repair a particular make—much of the service information provided in these chapters can be applied to other systems of similar design—and all types and designs of systems are covered.

Particular mention is due the illustrations in the books — especially those provided through the courtesy of the Utilities Engineering Institute of New York City and Chicago; and the David H. Ranken School of St. Louis. These schools took photographs in their own shop-classrooms, to illustrate many of the service operations described in the book.

These illustrations are particularly valuable because they show men doing the operations as they should properly be done.

The index is very complete, and is in cross-reference style—which may be best explained by saying that the page reference to "testing joints" is not only found under the "T" section in the index, but also under "J" where it is written as "joints, testing."

The MANUAL was created with the idea of rendering a much-needed and called-for service, and providing that service in as complete a form as possible.

Advertising by the refrigeration parts manufacturers in the MANUAL helps to complete the service by telling the refrigeration service man where he can look for materials, parts, and tools.

Smart and well-prepared copy which the manufacturers placed in the MANUAL tells just what they have to offer that the service man can use.

Pictures in Master Service Manual Demonstrate Proper Procedure

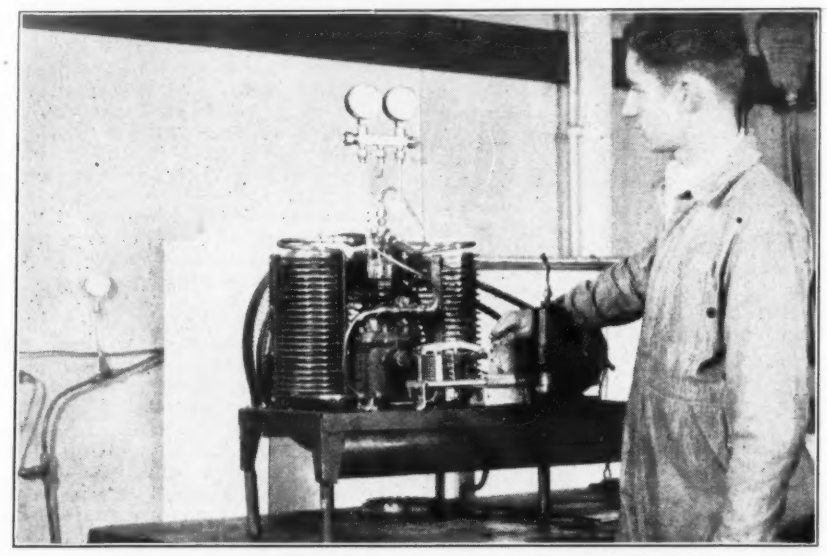

Fig. 120C—Student setting low pressure control for proper operation as explained in Service Operation No. 19.

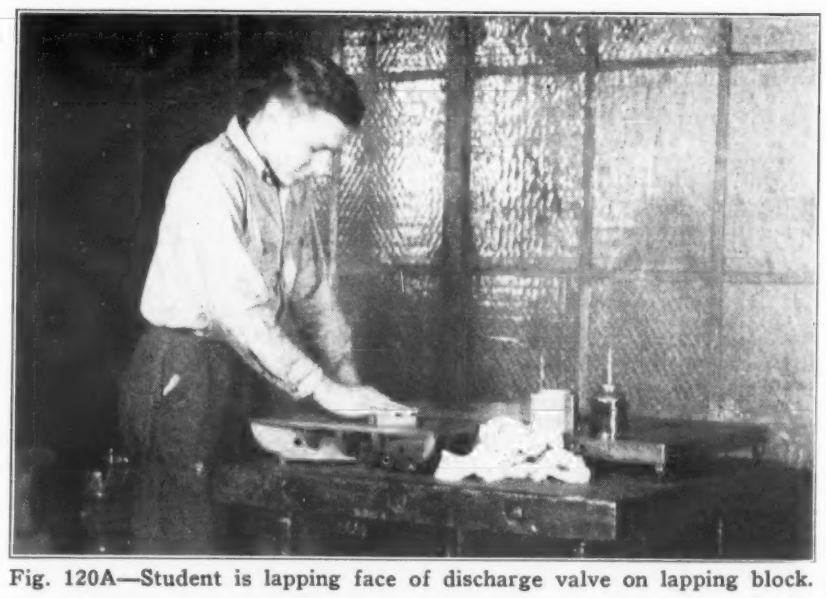

Fig. 120A—Student is lapping face of discharge valve on lapping block.

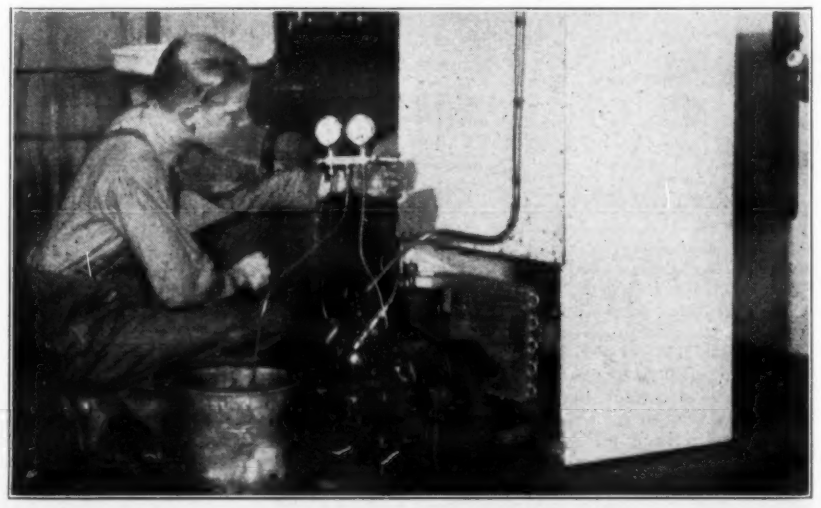

Fig. 135A illustrates method of purging air from condenser as explained in Operation 6. Setup of equipment is shown in Fig. 135B on page 230.

Letters from Service Men

Service Men Tell of Need for Catalogs

Royal G. O'Brien
Refrigeration Service Engineer
Repairs—Maintenance—Parts
Installation—Household and Commercial Units
New Bedford, Mass.
Feb. 19, 1936

Gentlemen:

Not knowing whether as a subscriber we are automatically put on your list for catalogue mailings, we would like to make certain. We are desirous of receiving as much information and leads as possible, therefore if it is necessary for us to register for your mailing service, will you kindly consider this letter as such?

As a subscriber to the ELECTRIC REFRIGERATION NEWS for the past two years, I have been highly satisfied with it and give it credit for making many important contacts, that would not have otherwise been made.

If suggestions are in order; why not a column on the serviceman's problems and questions. While your general question columns cover a broad field, it would appear that a special column edited by some particular engineer who could assist in special problems that might arise from time to time, especially among the less experienced or other independent servicemen, who strive to give conscientious service, would be of value.

Appreciating your courtesies and wishing you continued success.

R. G. O'Brien

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—or other beverage cooling uses where uninterrupted operation and greatest economy are desirable.
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Servicing and Repairing
Household & Commercial Refrigeration
Refrigerants, Oils, and Packing
126 Beverly Place, Tracy, Calif.
Feb. 14, 1936.

Editor:

Please enter my name to your mailing list to receive catalogues and literature from manufacturers and supply houses.

I have been a subscriber to the NEWS for the last two years and I think it is wonderful paper.

JOSEPH N. CHURCH.

Monmouth Refrigeration Service Co.
West Avenue
Long Branch, N. J.

Enclosed find our check in the amount of $6.00 to renew subscriptions to the following addresses:

Mr. C. R. Butcher, 90 Oakwood Ave., West Long Branch, N. J.

Monmouth Refrigeration Service Co., West Ave., Long Branch, N. J.

Kindly add our name to your Catalog Mailing List and oblige.

W. T. Bennett

Air-O-Heat
Refrigeration Service Co.
952 Michigan Ave., Schenectady, N. Y.
Feb. 14, 1936

Editor:

Dear Sir: We are subscribers to your paper, REFRIGERATION NEWS. We have received a lot of information from your paper which was very valuable to service men and we appreciate it very much.

We notice also that you are trying to help the refrigeration service man by making up a catalogue mailing list which will keep the service man in touch with the different jobbers so he can get parts for his different jobs.

We are independent service men, and we would like to take advantage of this service also. Will you kindly enter our name on your list for new catalogues.

Thanking you in advance.

A. Zalutsky

I am a subscriber to your NEWS paper, and I wish you would kindly add my firm's name to the catalog mailing list you are compiling—J. E. Corvette, Pres., Electric Refrigeration Service Co., 18 Elizabeth St., Charleston, S. C.

I would like my name placed on your catalog mailing list you are making up. I am a new comer to the refrigeration and air-conditioning industries and very much interested. I am a subscriber to your NEWS and have gotten four issues and find them most helpful and interesting.—Wm. C. Temme, 1205½ 4th Ave., Asbury Park, N. J.

Please include my name and address in your Catalogue Mailing List. Am a service man of 10 years' experience and enjoy your paper ELECTRIC REFRIGERATION NEWS, yet I miss the old Service section you printed years ago.—Loyd Adcock, Box 2726, Beaumont, Texas.

Place me on your catalogue and literature mailing list for refrigeration service men, and oblige. By refering to your subscription list you will find I am subscriber of long standing.—C. J. Hinkle, 5919 Goodwin Ave, Dallas, Texas.

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For commercial refrigeration machines larger than one horsepower, "Unified Control" offers an ideal solution to the problem of utilizing pressure or temperature controls as pilot devices for automatic motor starters. "Unified Control" combines in **one steel enclosure,** ready for mounting, a pressure or temperature regulator wired in conjunction with the proper automatic motor starter.

For ease of mounting, elimination of needless wiring, service advantages flexibility, and general appearance, "Unified Control" employing the 9100 Regulator line and Square D automatic starters is the logical answer to the control problem on commercial units of large size.

Write for further information on your particular "Unified Control" requirement.

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SQUARE D COMPANY, CANADA, LTD., TORONTO, ONTARIO

Questions

Service Parts

No. 2688 (Factory Distributor, Oklahoma)—"Would you please give us a list of manufacturers who would be in position to supply parts and so forth for distribution of these to refrigeration service men?

"We are strictly wholesalers and would be pleased to have the above information should you be in position to supply. If not, could you kindly advise us with whom to get in contact?"

Answer: Manufacturers of refrigeration supply parts are listed on pages 226-227, 221-223, and 258 through 326 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Many manufacturers of refrigeration supply parts advertise regularly in the weekly issues of ELECTRIC REFRIGERATION NEWS, and we suggest that you consult their advertisements for up-to-date information on parts.

Fans & Pulleys

No. 2689 (Parts Jobber, Macon, Ga.)—"Please send us a list of independent manufacturers of fans and pulleys to be used in replacements for Frigidaire compressors."

Answer: We suggest that you contact the following manufacturers for fans and pulleys to be used for replacement purposes:

Perfection Refrigerator Parts Co.
Harvey, Ill.

Tecumseh Products Co.
Tecumseh, Mich.

Schwitzer-Cummins Co.
1125 Massachusetts Ave., Indianapolis, Ind.

Swift Mfg. Co.
249 McDougall Ave., Detroit, Mich.

E. R. Capewell
231 N. Second St., Philadelphia, Pa.

Refrigerator Accessories

No. 2690 (Dealer, California)—"Will you please tell us which company it is who manufactures the porcelain enamelled containers with the chromium plated front usually used in the bottom shelf of a refrigerator for vegetables and fruits."

Answer: Manufacturers of household refrigerator accessories (which include porcelain enamelled containers) are listed on pages 253 through 255 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Biological Cabinets

No. 2691 (Dealer, Ohio)—"Will you furnish me with a list of companies who manufacture cabinets adapted to have a mechanical refrigerating system installed therein and which cabinets are suitable for the storage of biological vaccines and the like in drug stores.

"I am particularly interested in cabinets of about 15 or 20-cu. ft. storage capacity and equipped with a plurality of small drawers, baskets, or shelves, preferably slidably mounted in the cabinet, for the reception of small boxes or packages.

"Your list should include companies which, upon request, will furnish me with catalogs."

Answer: Concerning a cabinet for biologicals, we would suggest that you contact the following manufacturers:

Frigidaire Corp., Dayton, Ohio

General Electric Co.
Nela Park, Cleveland, Ohio

Westinghouse Electric & Mfg. Co.
Mansfield, Ohio

Fedders Mfg. Co.
57 Tonawanda St., Buffalo, N. Y.

Cabinet Manufacturers

No. 2692 (Subscriber, California)—"We have a copy of your REFRIGERATION DIRECTORY, but we would like to subscribe to the paper you get out, we believe every week.

"Please send us the present edition of the paper and we would like to subscribe to same on a yearly basis. If you will send us a statement showing us the amount per year, we will gladly send you our check.

"Would it be possible for you to give us a list of manufacturers that are making and selling refrigerator cabinets?"

Answer: The following companies are actively manufacturing and selling household refrigerator cabinets:

Seeger Refrigerator Co.
Arcade, Wells & Whitehall Sts.
St. Paul, Minn.

Steelcraft Industries
4851 Spring Grove Ave., Cincinnati, Ohio

Heinz & Munschauer
20 Superior St., Buffalo, N. Y.

Sanitary Refrigerator Co.
Fond du Lac, Wis.

Modern Refrigerator Co., Inc.
494 Dumont Ave., Brooklyn, N. Y.

Rex Mfg. Co., Inc., Connersville, Ind.

Erie Art Metal Co.
18th & Schall Ave., Erie, Pa.

Midwest Stamping & Enameling Co.
Morrison, Ill.

Davison Enamel Products
North Lima, Ohio

Standard Refrigerator Co.
Fond du Lac, Wis.

Lima Metal Products, Inc.
Charles St. & Penn. Ry., Lima, Ohio

A complete list of cabinet manufacturers will be found on page 226 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Cement for Brine Tanks

No. 2693 (Distributor, California)—"Do you know the name of the manufacturer of a special cement used in place of brine in ice cream cabinets to cast around either flooded or dry-expansion coils? If so, please send name or names of concerns to us."

Answer: Atlas Lumnite Co., 135 East 42nd St., New York City, has supplied a special cement of this type to ice cream cabinet manufacturers in the past. This company is a division of Universal Atlas Cement Corp.

Air Conditioning Data

No. 2694 (Manufacturer, St. Louis)—"We are very much interested in getting data on the number and any other information obtainable on air-conditioning installations in the various principal cities, and if you have such information practically completed for the 12 months ending Dec. 1935, we would like to have a rough copy of it for our own organization's use."

Answer: We have not made any summary of the air-conditioning installations in the various major cities, but have been publishing the data as we get it from the individual cities.

You are no doubt aware of this, and probably saw the very complete tabulation we had on Chicago installations in the Jan. 29 issue.

Data on other cities will be published in issues in the near future.

Truscon Refrigerators

No. 2695 (Dealer, Jackson, Miss.)—"Will you kindly advise us of the Truscon Steel Co. Refrigerator Division? What we would like to know is, are these people manufacturers of refrigerators? It is our understanding that they have purchased the Universal and Copeland properties. Are we correct in this information?"

Answer: We refer you to the issue of Nov. 20, 1935, on page 1 of which is a story telling of Truscon's plan in the refrigeration field for 1936, and on page 5 of which issue is an advertisement in which Truscon further outlines its plan.

Truscon has not purchased the properties of either Universal Cooler or Copeland Refrigeration Corp., to our knowledge.

Pictures of Parts

No. 2696 (Manufacturer, Wayne, Mich.)—"In your Jan. 29 issue is advertised on page 22 the MASTER SERVICE MANUAL and REFRIGERATION AND AIR CONDITIONING SPECIFICATIONS, both books at combination price of $5.

"Please advise if the MASTER SERVICE MANUAL carries illustrations of the component parts of the various makes of compressors."

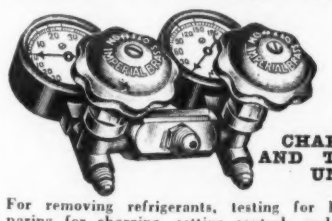
Answer: The MASTER SERVICE MANUAL does not show *all* the parts of *all* the various makes of compressors, but among the 240 or more illustrations in the book are many which show compressor parts.

Defrosting Method

No. 2697 (Service company, New York City)—"Can you advise us if you happen to know of any method of defrosting a domestic refrigerator which was in use prior to 1921, by any person at any place of which you might have knowledge?"

Up-to-the-Minute *for* 1936

EVEN more complete than in 1935, this thoroughly modern line provides fully for the latest needs in servicing and installation. A few examples are shown:



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For removing refrigerants, testing for leaks, preparing for charging, setting controls and expansion valves, etc. Equipped with Imperial "Sylpak" shut-off valves (operated on the sylphon principle). No. 200-C, $6.75.

192-CS (at left) operates on sylphon principle. 100,000 cycles of oscillation without rupture. For solder fitting. $2.20 & 3.40

93-C (at right). For multiple installations. Metal-to-metal seat makes leakproof seal. $2.31 to $3.18

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2-WAY BACKSEATING SHUT-OFF VALVE

IMPERIAL Valves Fittings & Tools

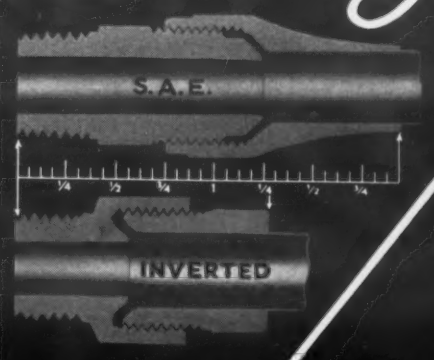
TUBE CUTTER

A clean right-angle cut, without burrs or chips. Leaves tubing round, ready for flaring.
94-F, 3/16" to 3/4" tubing.....$2.25
104-F, 5/16" to 1".....$3.50

Order from your jobber. Write also for new refrigeration catalog just off the press.

IMPERIAL BRASS MFG. CO.
565 S. Racine Ave. Chicago, Ill.

Seeing is



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The Refrigeration Engineer's Manual

By S. L. Potts

Figuring Final Temperature Of Gas after Compression

Chapter 4—Compression of Gases (Concluded)

The amount of heat contained in one pound of gas after compression is equal to the amount of heat it had at suction to compressor, plus the work performed by compressor in compressing this one pound of gas to the condenser pressure. The gas is considered to be compressed adiabatically, that is, no heat leaves the gas in the cylinder during compression. This is not true because most compressors are water or air cooled.

The final temperature of the gas after compression can be found by the following formula. The pressure after compression is the same as the condenser pressure (head pressure).

$$\frac{T_s}{T_h} = \frac{\left[\frac{P_s}{P_h}\right]^{\frac{n-1}{n}}}{} \text{ or}$$

$$T_s(P_h)^{\frac{n-1}{n}} = T_h(P_s)^{\frac{n-1}{n}}$$

$$T_h = T_s\left[\frac{P_h}{P_s}\right]^{\frac{n-1}{n}} = T_s\left[\frac{P_h}{P_s}\right]^{.231}$$

The exponent "n" for ammonia is 1.3 so that to find the value of the exponent $\frac{n-1}{n}$ we have

$$\frac{1.3-1}{1.3} = \frac{.3}{1.3} = .231$$

The total heat in the gases leaving the compressor is:

$$H_h = H_c + C_p(t_h - t_c)$$

The work done in the compression of the gas in foot pounds is:

$$W = 778\ (H_h - H_s)$$

The values for H_h and H_s for ammonia can be taken from the Mollier diagram or from the ammonia tables for saturated and superheated ammonia.

The indicated horse power of the compressor for one pound of gas per minute can be found by the formula:

$$\text{I.H.P.} = \frac{W}{33{,}000} = \frac{778\ H_h - H_s}{33{,}000}$$

The indicated horse power of compressor per ton of refrigeration can be found by:

$$\text{I.H.P.} = \frac{MW}{33{,}000} = \frac{M778\ (H_h - H_s)}{33{,}000}$$

$$\text{I.H.P.} = \frac{M(H_h - H_s)}{42.42}$$

Actual tests require 20 per cent greater power to overcome losses in compressor, so for practical purposes, the I.H.P. per ton of refrigeration is:

$$\text{I.H.P} = \frac{1.20\,M(H_h - H_s)}{42.42} = \frac{M(H_h - H_s)}{35.35}$$

The mechanical efficiency for motor drives is about 90 per cent, so the brake horse power per ton of refrigeration is:

$$\text{B.H.P.} = \frac{\text{I.H.P.}}{.90} = \frac{M(H_h - H_s)}{35.35 \times .90}$$

$$\text{B.H.P.} = \frac{M(H_h - H_s)}{31.81}$$

The amount of heat in B.t.u. per pound absorbed by the condenser is:

$$\text{B.t.u.} = H_h - h_l$$

H_c is the total heat in the saturated gas at condenser pressure, B.t.u. per pound.

H_h is the total heat in the superheated gas at final compression, B.t.u. per pound.

H_s is the total heat in gas at suction pressure, B.t.u. per pound.

h_l total heat in the liquid at condenser pressure if saturated, or at liquid temperature if below the saturated condition, in B.t.u. per pound.

T_s absolute temperature of saturated gas at head pressure.

T_c absolute temperature of gas at end of compression at head pressure temperature in degrees F.+460°.

T_h absolute temperature of superheated gas leaving compressor.

T_l absolute temperature of liquid in receiver, temperature F.+460°.

T_s absolute temperature of the gases at suction, temperature F.+460°.

t_h temperature of gas after compression in degrees F.

t_c temperature of gas at saturation and at condenser pressure degrees F.

P_c absolute head pressure at condenser.

P_h absolute head pressure at discharge of compressor. $P_c = P_h$.

P_s absolute suction pressure at evaporator.

C_p specific heat of gas at constant pressure.

C_l specific heat of liquid. Ranges from 1.07 to 1.16.

W work done in compressor in foot pounds per minute.

M weight of refrigerant per ton of refrigeration per minute.

Problems. An ammonia compressor has a suction of 15 pounds gauge and a head pressure of 151.7. The suction gas is dry and saturated. What is the temperature of the discharged gases? How many B.t.u. in each pound of gas leaving the compressor? How many heat units must be removed by the condenser?

$$T_h = T_s\left[\frac{P_c}{P_s}\right]^{.231}$$

Temperature gas at suction is—1° F.

$T_s = -1 + 460 = 459$ absolute temperature.

$P_c = 151.7 + 14.7 = 166.4$ lbs. absolute.

$P_s = 15. + 14.7 = 29.7$ lbs. absolute.

$$T_h = 459\left[\frac{166.4}{29.7}\right]^{.231}$$

$T_h = (459)(.231)(\log\ 5.603)$

Log 5.603 is .7482

(.231) (.7482) = .1728342.

Antilog of .1728 is 1.489.

$T_h = (459) \times (1.489) = 683.45$ abs. T

683.45—460 = 223.45° F. temperature of gas leaving compressor. The saturated temperature of the gas at this pressure is 85° F. The gas has a super heat of 223—85 = 138° F. after compression.

The total heat contained in one pound of the gas after compression is found by the formula for the value of H_h:

$H_h = H_c + C_p\ (t_h - t_c)$

$H_c = 631.4$ B.t.u. from tables.

$t_h = 223.45°$ F.

$t_c = 85°$ F.

$C_p = .508.$

$h_l = 137.8$ B.t.u.

$H_h = 631.4 + (.508)(223 - 85)$

$H_h = 631.4 + (.508)(138)$

$H_h = 631.4 + 70.104$

$H_h = 701.5$ B.t.u. per lb.

The heat removed by the condenser is:

$\text{B.t.u.} = H_h - h_l.$

B.t.u. = 701.5—137.8 = 563.7 B.t.u. per lb. of gas to condenser.

The work done in foot pounds in compressing one pound of gas is:

$W = 778\ (H_h - H_s)$

$= 778(701.5 - 611.4)$

$= (778)(90.1) = 70{,}097.8$ ft. lbs. work done per pound of gas compressed.

The work done per ton of refrigeration is found by the following formula:

$$\text{I.H.P.} = \frac{M(H_h - H_s)}{42.42}$$

$$M = \frac{200}{H_s - H_l} = \frac{200}{(611.4 - 137.8)} =$$

.422 lbs. NH_3 per ton.

$$\text{I.H.P.} = \frac{.422 \times 90.1}{42.42} = .896$$

The brake horse power per ton of refrigeration is found by formula for B.H.P. given above:

$$\text{B.H.P.} = \frac{.422 \times 90.1}{31.81} = \frac{38.0222}{31.81} = 1.2$$

Chapter 5— Compressor Size

The size compressor required to produce any desired refrigerating capacity depends on many factors.

1. Capacity in tons of refrigeration.
2. Temperature required in the refrigerated space.
3. Cooling medium to be used on condenser (water or air).
4. Speed of the compressor r.p.m.
5. Continuous or intermittent operation.
6. Constant or variable load.
7. Refrigerant to be used.
8. Type of the compressor.
   a. Single or double acting.
   b. Single or multiple cylinders.
9. Volumetric efficiency of cylinder.

Many times changes in some of these variable conditions will make a change in compressor size desirable.

Capacity in ton of refrigeration. If all other conditions remain constant, the size of the compressor will vary directly as the refrigerating capacity increases. That is, the volume in cubic feet of refrigerant gas discharged by the compressor per minute for a ten ton capacity will be ten times the capacity discharged for one ton capacity.

Temperature in the refrigerated space. The temperature in the refrigerated space will depend on the suction pressure and the losses encountered in gathering the heat from the refrigerated spaces. Some systems of cooling (heat gathering) require several changes of heat from one material to another, each change produces losses and effects the final suction temperature. As the temperature lowers, the gases become expanded into a larger volume per pound and the compressor size will be larger for a given refrigerating capacity at low temperatures. The lower the refrigerator temperature required, the larger the compressor, with all other values remaining the same.

The cooling medium used on condenser controls the head pressure. Air cooling usually requires higher head pressure than water cooling. The head pressure is influenced by the type condenser used and the conditions under which it operates. High head pressure requires increased capacity in the compressor for a given capacity of refrigeration.

Speed of compressor. The capacity of the compressor increases in direct proportion to the speed within the operating range of the compressor.

Continuous or intermittent operation compressors are operated under both methods of operation. A compressor operated continuously will produce a larger capacity output over 24 hours than one operated for half or quarter time. Some compressors only operate at nights so as to take advantage of cheap power rates.

Constant or variable load. The maximum and minimum load conditions will influence the selection of a compressor for size. If the load is constant, the problem is simple to design a compressor for that constant condition. If the load varies through a wide range from hour to hour, from day to day, or from winter to summer, it might be desirable to have two or three smaller size compressors that can be run individually or together to produce the desired capacity.

The refrigerant used in compressor. This effects the size and the design of the compressor very materially. The refrigerant may require a high head pressure to produce condensation. This will require that all the parts be built with extra strength. The high compression will require a change in the relation of the stroke to the diameter of the cylinder in order that the compression pressure inside cylinder may be carried up to the head pressure in one stroke of the piston. Some refrigerants have a very large gas volume per pound of refrigerant. This requires a proportionally larger cylinder volume to handle a given amount of gas in a given time. Some refrigerants have a very low heat value per pound and this will require that more pounds will have to be handled for a given capacity of refrigeration. The influence that the refrigerant will have on the compressor size can be seen very readily from table No. 1, 2, and 3.

Type of compressor used. A single acting cylinder that produces only one discharge of gas to each revolution will only discharge half the gas that a double acting cylinder (which produces two discharges of gas per revolution) of the same size and stroke, provided the volumetric efficiency is the same in both, (the volumetric efficiency is seldom the same). In general, it is customary to say, that it requires two single acting cylinders to produce the same refrigerating capacity as one double acting cylinder, the cylinders to be the same size and stroke in each case. Vertical single acting cylinders are used in small size compressors. Large capacity compressors are usually made horizontal and double acting.

Volumetric efficiency. This factor depends on the clearance in the cylinder after compression is complete (piston at the end of stroke) and the ratio between the initial and the final pressures in the cylinder. The volumetric efficiency of single acting vertical compressors is usually higher than double acting compressors. The values run from 50 to 85 per cent.

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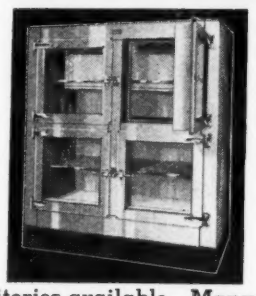
The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries



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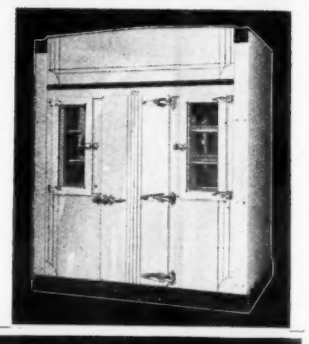

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Patents

Issued Feb. 4, 1936

2,029,368. METHOD AND APPARATUS FOR CONDITIONING AIR. George R. Goldthwaite, South Easton, Mass., assignor to B. F. Sturtevant Co., Hyde Park, Mass. Application Dec. 15, 1931, Serial No. 581,174. 8 Claims. (Cl. 257—138.)

2,029,428. AIR CONDITIONING METHOD AND APPARATUS. Donald B. Knight, Brooklyn, N. Y., assignor to Refrigeration Research Corp., Brooklyn, N. Y. Application Aug. 17, 1932, Serial No. 629,133. 8 Claims. (Cl. 62—176.)

2,029,574. AIR CONDITIONER AND WATER HEATING SYSTEM. Charles O. Knudsen, Brooklyn, N. Y. Application April 3, 1933, Serial No. 664,240. 7 Claims. (Cl. 257—8.)

2,029,615. TWO-STAGE VALVE. Willis H. Gille, St. Paul, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. Application Nov. 11, 1933, Serial No. 697,685. 18 Claims. (Cl. 236—74.)

2,029,845. GASKET FOR REFRIGERATOR CABINETS AND THE LIKE. Ethan W. Vars, Erie, Pa., assignor to General Electric Co. Application Jan. 30, 1935, Serial No. 4,106. 10 Claims. (Cl. 20—69.)

2,029,860. REFRIGERATOR DISPLAY CASE. Roland P. Daemicke, Chicago, Ill., assignor to The Daemicke Co., Chicago, Ill. Application May 5, 1934, Serial No. 724,091. 3 Claims. (Cl. 62—89.5.)

2,029,890. CONDENSER FOR REFRIGERATING MACHINES. Delbert F. Newman, Schenectady, N. Y., assignor to General Electric Co. Application Dec. 1, 1934, Serial No. 755,559. 10 Claims. (Cl. 257—36.)

2,029,891. CONDENSER FOR REFRIGERATING MACHINES. Delbert F. Newman, Schenectady, N. Y., assignor to General Electric Co. Application May 27, 1935, Serial No. 23,619. 8 Claims. (Cl. 257—36.)

2,030,005. CONTAINER AND COOLING MEANS THEREFOR. John L. Kellogg, Chicago, Ill., assignor to Helen L. Kellogg, Chicago, Ill. Application Oct. 30, 1933, Serial No. 695,735. 6 Claims. (Cl. 62—91.5.)

2,030,032. AIR CONDITIONING SYSTEM EMPLOYING REFRIGERATION. Robert E. Keyes, Dedham, Mass., assignor to The Cooling & Air Conditioning Corp., New York, N. Y. Application Sept. 7, 1934, Serial No. 743,059. 4 Claims. (Cl. 62—129.)

Issued Feb. 11, 1936

2,030,155. HUMIDIFIER. Louis V. Roberts and David Chalmers, Kansas City, Mo. Application July 8, 1935, Serial No. 30,264. 4 Claims. (Cl. 299—20.)

2,030,233. FREEZING APPARATUS. Gerald F. Thoma, Canton, Ohio. Application May 19, 1933, Serial No. 671,910. 1 Claim. (Cl. 62—114.)

2,030,291. REFRIGERATOR CONSTRUCTION. Warren C. Fuller, Mansfield, Ohio. Application Sept. 25, 1934, Serial No. 745,439. 3 Claims. (Cl. 62—38.)

2,030,316. AIR CONDITIONING DEVICE. Fred M. Opitz, Milwaukee, Wis., assignor to Hexcel Radiator Co., Milwaukee, Wis. Application Oct. 4, 1932, Serial No. 636,164. 20 Claims. (Cl. 219—39.)

2,030,350. SOLAR OPERATED REFRIGERATING SYSTEM. Albert T. Bremser, Westmont, N. J., assignor of fifty-two per cent to Carl G. Fisher, Miami Beach, Fla. Application April 10, 1933, Serial No. 665,461. 8 Claims. (Cl. 62—119.5.)

2,030,413. REFRIGERATOR. James A. Stone, Philadelphia, Pa. Application Dec. 14, 1932, Serial No. 647,087. 12 Claims. (Cl. 62—91.5.)

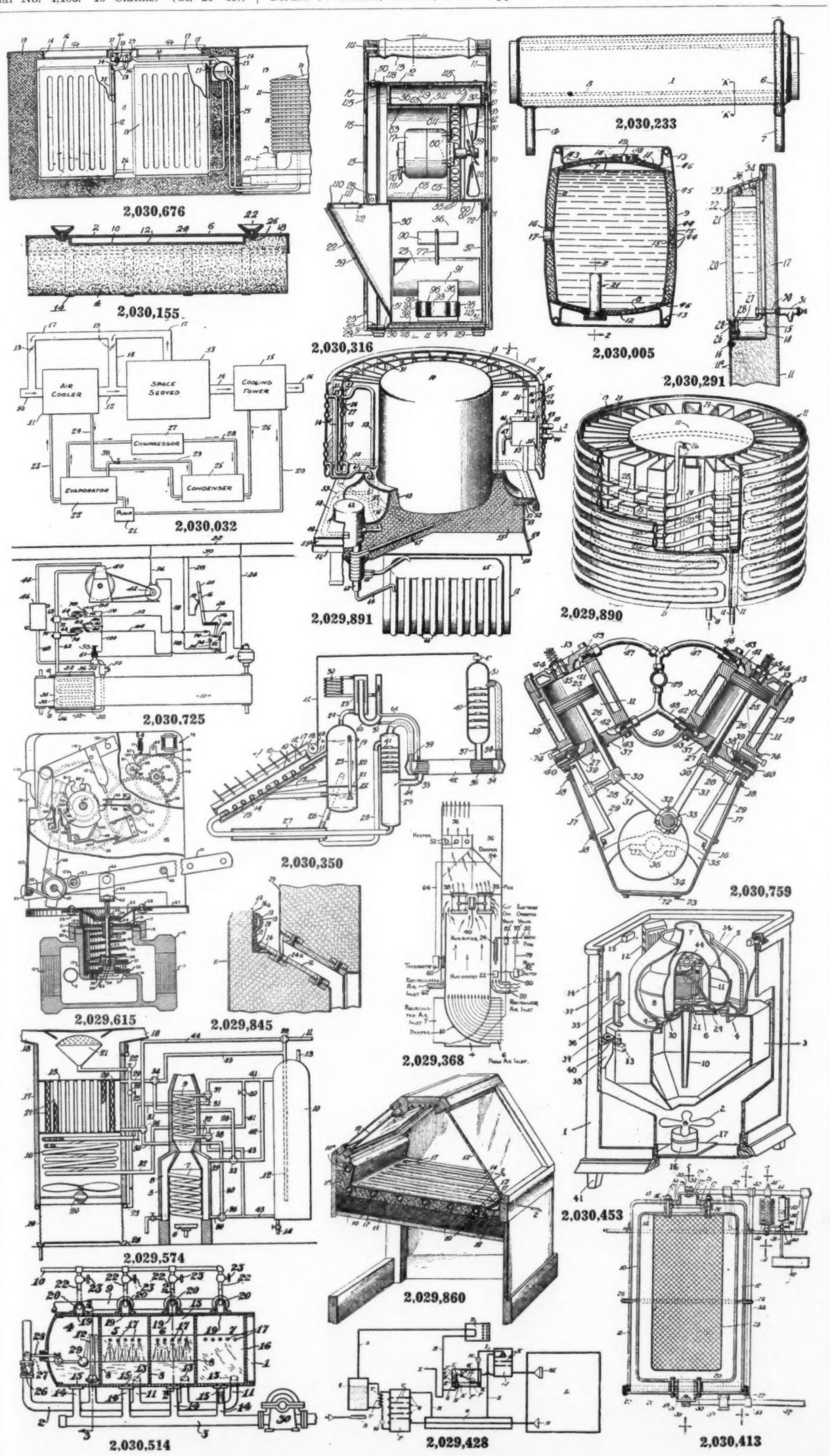
2,030,453. HUMIDIFIER. Leo Kresser, Springfield, Mass., assignor to United American Bosch Corp., Springfield, Mass. Application Sept. 20, 1933, Serial No. 690,179. 5 Claims. (Cl. 261—91.)

2,030,514. REFRIGERATING CONSTRUCTION. Frederick H. Hibberd, Bayside, N. Y., George H. Woodard, Phillipsburg, N. J., and John Kirgan, Easton, Pa., assignors to Ingersoll-Rand Co., Jersey City, N. J. Application March 23, 1934, Serial No. 716,946. 8 Claims. (Cl. 62—152.)

2,030,676. REFRIGERATING SYSTEM. Leonard W. Atchison, Schenectady, N. Y., assignor to General Electric Co. Application Sept. 29, 1933, Serial No. 691,476. 6 Claims. (Cl. 62—3.)

2,030,725. MEANS FOR CONTROLLING TEMPERATURES IN THE REFRIGERATING SYSTEMS OF PACKAGE SEALING MACHINES. Merlin A. Sticelber, Kansas City, Mo., assignor of one-half to William Stoneman, Jr., Kansas City, Mo. Application Nov. 16, 1934, Serial No. 753,270. 15 Claims. (Cl. 62—4.)

2,030,759. COMPRESSOR UNIT. Bob Neal, Arkadelphia, Ark. Application Jan. 9, 1934, Serial No. 705,964. 1 Claim. (Cl. 230—187.)



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CABINETS—Discontinued 1935 models—4, 5, 6 cu. ft. (net) capacities—bottom mount—high quality—attractive appearance—low prices while they last—also a limited quantity of factory seconds. Write or wire for specifications and prices stating quantity and sizes desired. Midwest Stamping & Enameling Co., Morrison, Ill.

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Anheuser-Busch Uses Copeland Machine In Bottle Cooler

ST. LOUIS—Refrigeration division of Anheuser-Busch, Inc., is introducing a new self-contained, wet-storage type bottle cooler, equipped with a Copeland refrigerating system.

Cabinets are constructed with refrigeration coils secured to the side and end walls of the storage compartment. This has an advantage, claim its makers, in that labels and bottle caps are more easily removed from the storage compartment when it is being cleaned.

The Copeland unit used is a 2-cylinder, ¼-hp. compressor. The system has a thermostatic switch with Cutler-Hammer thermal overload protector, and an American Radiator expansion valve.

The cabinet is constructed of heavy gauge sheet steel, and is finished in a green baked enamel.

Celotex insulation is used throughout. Each block is encased in waterproof wrapping, and then is encased in steel.

Lift and hinges on lids are chromium-plated. The complete lid assembly is instantly removable. The cabinet is equipped with large casters.

Bottom of the cabinet is louvred on front and sides, and is open in the rear. There is a receptacle for bottle tops on the back.

Portland Market Gets Kelvinator Units

PORTLAND, Ore.—Spath's Market here, recently remodeled, has been equipped with a Kelvinator commercial refrigeration system. Sale of the equipment was made by Powers Furniture Co., local Kelvinator dealer, and installation was by Bressie Electric Co., electrical contractor.

The system consists of two walk-in coolers, one 13 by 22 by 9 ft., and the other 12 by 20 by 9 ft., equipped with forced-convection coils, refrigerated by a 3-hp. water-cooled, methyl chloride condensing unit and a 2-hp. air-cooled unit.

A 1½-hp. air-cooled unit, operating full automatic on frosted iron pipe coil, takes care of a 45-ft. showcase, while a similar unit supplies refrigeration to a 33-ft. display case.

This four-unit combination, owners of the market assert, provides for flexibility for economical operation.

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